This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

LANE MEDICAL LIBRARY STANFORD STOR
L941 .H43 1901
Certain mental changes that accompany vi

HEAD, HENRY.

CERTAIN MENTAL CHANGES THAT ACCOMPANY VISCERAL DISEASE.

L941
H43
1901

LANE

MEDICAL LIBRARY

LEVI COOPER LANE FUND

P. Ellis Nelson
Compliments of the author
London July 1910

THE GOULSTONIAN LECTURES FOR 1901.

Certain Mental Changes that accompany Visceral Disease

BY

HENRY HEAD, M.D., F.R.S.

Assistant Physician to the London Hospital

[Reprinted from "Brain," Vol. XXIV., Part III., 1901]

London
JOHN BALE, SONS & DANIELSSON, LTD.
OXFORD HOUSE
83-89, GREAT TITCHFIELD STREET, OXFORD STREET, W.

1901

LANE LIBRARY

TULANE LIBRARY

741
43
901

CERTAIN MENTAL CHANGES THAT ACCOMPANY VISCERAL DISEASE.

(*The Goulstonian Lectures for* 1901.[1])

By HENRY HEAD, M.D., F.R.S.

Assistant Physician to the London Hospital.

Introduction.

Chapter I.—Changes that may accompany Visceral Disease.

§ 1.—Hallucinations—(*a*) Vision, (*b*) Hearing, (*c*) Smell.

§ 2.—Moods—(*a*) Depression, (*b*) Exaltation.

§ 3.—Suspicion.

Chapter II.—Conditions that underlie the Appearance of these Phenomena.

§ 1.—Physical conditions associated with the Depressed Mood.

§ 2.—Physical conditions associated with the Sense of Physical Exaltation.

§ 3.—Causes that underlie the State of Suspicion.

§ 4.—Conditions associated with the appearance of Hallucinations.

Chapter III.—Changes in Memory and Attention.

Chapter IV.—Conclusion.

Appendix.—Examples reported in full.

Introduction.

We are all conscious that our mental well-being is dependent on the right activity of our internal organs, and daily experience shows that grave mental disturbances may arise in connection with visceral disease.

[1] Delivered before the Royal College of Physicians, June 25, 27, and July 2, 1901.

79719

Such mental changes may be produced in many different ways.

(1) A disturbed activity of the heart may alter the circulation to the brain or may change the character of the blood with which it is supplied. The delirium that accompanies a failing heart or profound vascular degeneration may be instanced as an example of a mental change dependent directly on altered vascular conditions.

(2) Disease may attack some organ which in health produces a substance necessary for the normal metabolic activity of the tissues. Thus, destruction of the thyroid gland is followed by the characteristic hebetude of myxœdema owing to the absence from the body of some constituent manufactured by that gland.

(3) Disease may attack some excreting organ and thereby lead to the retention of toxic agents in the blood.

Such toxic substances are probably responsible for the morbid mental states which frequently accompany disease of the kidney and liver.

(4) Visceral disease may so lower the resistance of the nervous system that a poison such as alcohol, already circulating in the blood, can produce mental changes differing perhaps both in quality and intensity from those which would have been produced by the same poison under other conditions.

(5) Lastly, disease of the viscera may so lower the patient's resistance that some inherent mental tendency may become manifest as active mental disease.

It might be thought that all changes in mental states directly traceable to the presence of some visceral disease could be ascribed to one or more of the above causes.

But now that disease of internal organs has been shown to be accompanied by pain radiating around the surface of the body and by tenderness of its superficial coverings it becomes necessary to examine in how far the intrusion of such stimuli upon the nervous system are accompanied by changes in consciousness. It is my intention therefore to bring before you in these lectures a group of changes in consciousness mainly associated with the reflected pains of

visceral disease. These mental changes are recognised by the patients themselves, and in some cases are associated by them with the first appearance or progress of their disease. Yet in spite of the frequency with which these symptoms make their appearance, their existence is unknown to the physician and to the experimental psychologist.

But before passing on to the results of this investigation, let me first say a few words on the method by which they have been obtained.

The work was begun in 1893, when, as House Physician at the Victoria Park Hospital for Diseases of the Chest, I had the opportunity of seeing many cases of disease of the heart and lungs under the most favourable conditions for accurate observation. Owing to the kindness of the Staff of this Hospital, and the liberality of the Committee, my period of office was extended, and I was permitted to continue my investigations even after I ceased to be their officer.

For the last five years the observations made at the Victoria Park Hospital have been amplified and confirmed at the London Hospital, both from the study of patients under my own care and those under the care of my colleagues.

The patients I have studied for this research belonged to the usual hospital class, and more particularly comprised such members of this class as suffered from pulmonary, cardiac, or abdominal disease. I have included no patient who had been insane or was suffering from any form of nervous disease. I have excluded all those with an hereditary taint of insanity, and all Hebrews, owing to the recognised tendency of this race to functional neuroses.

In every case the notes were taken by myself, and it is useless for any one to attempt to either controvert or confirm the results I am about to bring forward if he delegate that work to another. The usual history taken by a ward clerk or registrar is useless for this purpose; for the patient is extremely sensitive on all matters that concern the sanity of his mental processes, and it is only after his confidence has been gained that the full extent of the mental changes can be estimated that underlie an apparently normal behaviour.

Above all things it is necessary to avoid allowing the patient to think you believe him to be mad. I therefore never take the family history of neuroses and insanity until the whole examination is finished.

It is absurd to suppose that he will confess to the existence of mental changes before a crowd of students such as accompanies a physician in his usual visit to the wards. And in most cases it is not advisable that the physician when investigating a patient from this aspect, should be accompanied even by a sister or nurse; for men are peculiarly adverse to exposing their emotional weakness before a woman, and women do not trust another woman not to tell "how silly they have been." But both male and female patients have no reticence before a capable house physician, recognising that the treatment of their disease depends on his complete knowledge of all its phenomena, however remote. Thus, in order to control my observations, I have of late frequently examined into the mental state of these patients in the presence of my house physicians.

The publicity of a large hospital ward is a bar to confidence, and I am therefore in the habit of placing screens round the patient's bed during such examination. For the same reason darkness is a great help to confidence, and many of my notes have been taken between the hours of seven and nine in the evening.

I am in the habit of begining with the history of the present illness and previous ailments. I then ask if the patient has been low spirited, and estimate in conversation with him the presence or absence of causes that may have led to such depression. Thence I pass to sleep or dreams, and so gradually to enquiries for hallucinations, loss of memory or attention, and delusions of suspicion. If the patient shows any disinclination to answer or fear as to what his answers may lead me to think of his mental capacity I question him with regard to his life or perhaps pass on to a physical examination. However, as a rule, if precautions are taken to ensure privacy, patients show no reluctance to reveal symptoms that many of them definitely associate with the oncoming of their disease, provided the

interrogator be the physician under whose care they may be during their stay in a hospital. To many of them it is a relief to talk freely of phenomena that have puzzled or frightened them; phenomena of which the description has exposed them to universal ridicule or to the accusation of untruthfulness.

No one can have worked in the wards of a hospital without recognising the apparently inexplicable changes in character that from time to time occur amongst the patients. On passing from bed to bed in the usual round you may have been astonished to notice the change in some patient suffering from disease of the lungs or of the heart. The day before he may have been sitting up in bed quiet, orderly, answering each question well. Now he is lying with face averted, obviously unwilling to be disturbed. His answers are monosyllabic, and if examination be persisted in he is seen to be keeping back his tears with difficulty. The sister of the ward says that "Number so-and-so has been a little hysterical lately," and so the matter drops. On your next visit you may find that this patient has discharged himself without lodging any complaint or giving any reason.

But if you go back to this patient later in the day you will frequently find that he has resumed his usual condition, and if you are unattended by students or nurses he will willingly confide to you the curious symptoms by which he was attacked. This he will the more readily do as he feels he owes you an explanation for his otherwise inexplicable conduct earlier in the day.

He will tell you that he suddenly became low-spirited, and was sure something was going to happen to him. The nurse and sister of the ward are "against him" and "want to get rid of him." His sleep has been disturbed by horrible dreams, and he may tell you that one night he woke to see a corpse standing by his bed. He has not been able to take his dinner because everything stank. Lately he has frequently imagined filthy smells that made him feel sick. No one else can ever smell them. Moreover, his memory has become very bad lately, and he reads the same thing in the newspaper over and over again.

Now, I hope to be able to show you that in most cases the reflected pain of visceral disease is the main factor in the production of these mental changes.

Chapter I.—Changes that may accompany Visceral Disease.

§ 1.—Hallucinations.

Under certain conditions sane persons suffering from visceral disease are liable to develop hallucinations of sight, of hearing, or of smell. Hallucinations of taste also probably occur, but I shall neglect the possible occurrence of this form of hallucination. For, owing to the condition of the tongue, it is usually impossible to be certain that the sensation of which the patient complains has no objective basis.

The precautions taken to insure accuracy have been unusually stringent. All observations on hallucinations are, in my records, divided into three classes according to the conditions under which each observation was made.

In the first class stand those cases where the patient was under observation in the hospital at the time the hallucination occurred; where it was demonstrably certain that the sensation had no objective basis and where the physical state of the patient, more particularly the condition of the sense organ implicated, and the sensibility of the skin were recorded both before and after the supposed hallucination.

In the second class I have placed such hallucinations as occurred during the patient's stay in hospital under continuous observation by myself, but where my attention was not called to the occurrence of an hallucination until more than twenty-four hours after the event.

The third class contains cases where the patient describes the occurrence of what appear to have been hallucinations before his entry to the hospital. It is obvious that the value of this group will vary according to the form assumed by the hallucination. Thus, if a patient states that when at home he suffered from the occurrence of filthy smells that no one else could appreciate, his statement is of little

value for this research. But if, on the other hand, he woke one night to see a white figure standing by his bed which his wife was unable to see, there is a strong probability that he was subject to an hallucination of vision.

Thus, when discussing hallucinations of vision I shall make use of all three classes. When dealing with hallucinations of hearing I shall use only those that occurred during the patient's stay in hospital, but shall touch for comparison on certain occurrences that were demonstrated by the patient and his friends to have had no objective basis, or were opposed to natural probability (*e.g.*, the ringing of a bell in a house that has no bells). With regard to hallucinations of smell, I shall only deal with those where I was able to prove by examination at the time of their occurrence that there was no external cause for the smell of which the patient complained, nor any condition of the nose, mouth, or tongue that could in any way be held responsible for its production.

It might be justly urged that such canons of criticism reduce the available material to minute proportions. This is true unless at the same time the observer increase his opportunities for observation beyond those usually sought even by such as are resident in a hospital. And, indeed, it is only when resident that the full opportunities of complete observation occur. Whenever a patient refuses food let the physician be made aware of it and let the food be preserved for his inspection. Let him see that his visits at night are made as silently as possible, and if it is necessary to use a naked light for more than a few moments in the examination of any patient let him screen that patient's bed, so that the remainder of the ward may not be illuminated. Let him learn the habits of his patients and cultivate the tradition that there is nothing too trivial or common for his interested attention.

(*A*) *Hallucinations of Vision.*

Before we enter upon a consideration of the various forms that may be assumed by hallucinations of vision in these cases let me give you an actual instance.

A man, aged 29,[1] who had been a painter, was admitted to the hospital with pulmonary tuberculosis. The disease affected both apices and there were signs of a previous pleurisy at the right base. He complained that occasionally during the nine months of his illness and more particularly during the few weeks preceding his admission he imagined he saw someone standing at the foot of his bed or walking across the room. Five days after admission he woke up to see a figure in a long cloak all in black at the foot of his bed. The face and arms seemed to be covered in the cloak. He was very frightened, shivered as if with cold, and sweated profusely. It seemed to upset him altogether and he lay awake with a bad headache, feeling depressed and ill.

The commonest form assumed by the hallucination of vision in these cases is that of a figure; neither arms nor legs are seen, and the figure appears to be draped and not clothed. Patients are unanimous that this figure is unlike anything they have ever seen and they are peculiarly definite in describing it as "draped," "wrapped in a shawl," "wrapped in a sheet," and in two instances volunteered that "it was dressed like statues are dressed and not in proper clothes." The limbs are never visible and some patients account for this by saying the hands and arms were hidden under a cloak. The head may be covered, but one patient said he saw long dark hair hanging on either side of the face. The face is frequently misty and it is probable that this mistiness gives rise to the impression that there is a "shawl on the head," or that the figure has "long black hair" on either side of the face.

Sometimes, however, it may consist of a face only, and one patient before admission was troubled by a face looking through the bars at the bottom of his bed. From this there is an easy transition to a "pair of eyes looking through the bars at the foot of the bed," of which more than one patient complained.

In one case only the patient saw a hand and arm come round the door of the ward that stood open flush with her

[1] Example 6, p. 419. (Case No. 68, table 3).

bed. This arm was extended on to the white counterpane, and she sat up in bed expecting the body to appear round the edge of the wide-opened door.

These hallucinations in all cases are white, black, or grey. They are never, so far as my experience goes, coloured or even normally tinted. For if the face is white, even the lips are said to be colourless, and it is probably this peculiarity that causes patients to describe such hallucinations as "the figure or face of a corpse." This forms a differentiating point between these hallucinations of the sane and the usual hallucinations of the insane. For in the insane the vast majority of hallucinations of vision either resemble some normal object or are highly coloured. I do not wish it to be understood that these black or white hallucinations do not occur to the insane; but they only form a small proportion of the total hallucinations of vision that occur amongst patients in an asylum. On the other hand, when delirium is absent, hallucinations of vision in sane persons suffering from visceral disease are always of the type I have just described.[1]

Patients express great difficulty in deciding whether the figure was that of a man or a woman. The face is frequently not visible. When seen it is always beardless, which makes many say they think it must have been a woman. On the other hand, the complete flatness and absence of the usual undulations of a woman's figure, suggest that it may have been that of a man. If the figure was white, most say at once "It was a corpse;" if it was dark, most deny the possibility of telling whether it were male or female.

Curiously, not one of my patients spoke of the hallucination as a ghost, possibly owing to the almost entire ignorance shown by the London-bred population of ghost stories or fairy tales.

Whatever the form assumed, the figure or face is single. I have found no instance so far in the sane where more than one face or figure appeared if the patient's eyes were open. I have very carefully excluded the not uncommon

[1] I have carefully excluded all cases where alcoholic excess might be expected.

condition where faces or figures seem to stream past when the eyes are closed, though the patient is awake.

In the majority of instances the figure remained stationary at the foot or on one side or other of the bed. It may, however, pass in front of the bed from left to right or from right to left, and is sometimes seen in the doorway. If it assume the form of a single face it is usually seen at the foot of the bed, and not uncommonly is said to "grimace." Usually the patient wakes from sleep to see it standing near his bed, and after a variable interval it disappears without movement. On the appearance of such an hallucination several male patients, before admission to the hospital, sprang out of bed to seize the person whom they supposed to have entered the room. The figure at once disappeared.

No sound accompanied the appearance of the hallucination of vision in any case; the figure did not speak, and when it moved no footsteps were heard. It made no gestures, and the "grimacing" occasionally mentioned probably refers rather to an unpleasant expression of the face than to any mobility of its features.

Such hallucinations of vision do not occur in the bright light of day. Usually the patient wakes from sleep to see the figure or face beside his bed. But in two cases,[1] although the hallucination occurred at night the patient was lying awake and saw the figure appear. Another patient[2] saw a figure in the corridor of the hospital when she got out of bed early on a February morning. In other cases the hallucination appeared in the evening when the patient was sitting quietly in a dimly lighted room.

Almost every case felt frightened with the first hallucination of vision, and in many the fear was accompanied by sweating, heart-beating, and "goose-flesh." If the hallucination is frequently repeated men, as a rule, recover their self-control and ultimately come to look upon the repetition of the hallucination with curiosity, often accompanied by anger that they should be "so fooled."

These hallucinations are not uncommonly accompanied by the depressed mood I shall describe later. In such cases

[1] No. 9, table 1, and No. 90, table 3. [2] No. 79, table 3.

the patient is convinced that the appearance is a sign that some ill-fortune has happened, or is about to happen. He believes some near relative is dead or in trouble, and not infrequently says that the figure was that of some dead relation, *e.g.*, "my sister." Asked if it resembled his sister he answered, "Not in the least, but I know it must have been my sister because she is the only one of my relations who is dead."

The feeling-tone that accompanies the colourless white figure varies greatly, but the dark or black hallucinations are uniformly associated with fear or its physical manifestations.

[Amongst the cases reported in full instances of hallucinations of vision will be found in example 1, p. 404, § 3; example 4, p. 415, § 3; example 6, p. 420, § 4.]

(*B*) *Hallucinations of Hearing.*

All these hallucinations are of a simple type and in this way resemble the hallucinations of vision that occur under similar conditions. Owing to this characteristic it is more difficult to establish their independence of an external cause than is the case with the more complex auditory hallucinations amongst the insane. For if an insane patient complains that when he is alone at night a voice cries out to him that he is going to hell, it is certain that he is the subject of an hallucination of hearing; but if a sane patient states that before admission to the hospital when alone at night he heard knocking on the wall by his bedside it is impossible to be certain that the sensation had no external basis. Even when the patient is under continuous observation in a hospital it is frequently impossible to prove that the sound he says he has heard is an hallucination. But in the following case I was not only present myself during more than one hallucination of hearing, but was also able to demonstrate the associated conditions to a colleague.

The patient, a bright, healthy young woman, aged 23, was undergoing the training of a nurse. She returned from

a short holiday with a temperature of 100° F., was warded for three days and then, as the temperature had fallen, returned to duty. Four days after she was again warded with slight swelling of knees and ankles which passed away rapidly. Then she began to suffer from reflected pains in the lower part of the chest accompanied by superficial tenderness, mainly over the seventh and eighth dorsal areas on the left side. She complained of temporal and vertical headache which was also associated with superficial tenderness. She was short of breath on the least exertion and the temperature continued to rise occasionally to 100° F. Ultimately a systolic murmur appeared at the apex which was not conducted to the back and did not obscure the first sound. The pulmonary second sound was accentuated. No other system showed any abnormal signs. The reflected pain and the temporal and vertical headache caused her considerable discomfort and for the first time in her life she began to suffer from paroxysmal attacks of depression. She also complained of curious noises under her bed at night. One night at 11.30 p.m. I passed her door and noticed that she was sitting bolt upright in bed with the gas blazing to its full extent; she looked frightened and was sweating. Her temperature was 99° F. She had a good deal of pain and tenderness over the eighth dorsal area on both sides, greater on the left than on the right side. There was marked superficial tenderness over the vertical area of the scalp on both sides. No other fresh physical signs had made their appearance.

She then told me she had not been able to sleep because she had been troubled by odd sounds and that at the moment she could still hear a noise resembling loud breathing or inarticulate whispering under her bed. For this I was able to assure myself there was no external cause. Her hearing was good (watch heard at three feet left and right), the meatus was free from wax, the membranes were normal and showed no cupping.

These noises occurred repeatedly at varying intervals during the next two weeks, and my colleague and I were able to assure ourselves that these sounds were truly

hallucinatory and to study the conditions under which they made their appearance. She was not taking salicylic acid or quinine in any form.

The last traces of pain left her a month afterwards and up till her marriage, six months later, she had no further hallucinations. The systolic murmur persisted over the mitral area.

Such hallucinations of hearing, occurring in sane persons suffering from visceral disease, are never articulate voices and in this way differ characteristically from the commonest form of hallucination of hearing amongst the insane. Amongst my cases the hallucinations assumed the form of tapping or knocking (eleven cases), the sound of one or more bells (seven cases), a low whistling sound (one case), a sound like treading or heavy footsteps (one case), and a sort of breathing or inarticulate whispering (one case).

It is not necessary to be present in order to recognise that some of the sounds heard by these patients during their stay in hospital are hallucinations. Thus one patient complained that she heard a noise as if someone was stamping or walking heavily in the small space that separated the left side of her bed from a thick internal wall. Again, it is clearly improbable that the sound of a small bell rung sharply in the middle of the ward at night was other than an hallucination.

And it is sometimes possible to be tolerably certain that some of the sounds which these people complain of having heard before admission to the hospital were hallucinatory—as, for instance, where a male patient, hearing continuous knocking outside his window, compelled his wife to go down to find out why they were mending the street in the middle of the night. Again,[1] one patient, who was the subject of a well-observed hallucination of hearing in hospital, told me that since her illness, when sitting alone in her kitchen at home, she has heard heavy footsteps come through the door behind and to the left of her seat. Finding no one had entered the room she, on several occasions, turned her chair round. Shortly after she would

[1] Case No. 14, table 1.

again hear the same heavy footsteps which, now that she was facing the door, appeared to come from the wall behind and to the left of her chair.

The intensity of such hallucinations of hearing is very variable. Sometimes they consist of a continuous sound such as a whistle, sometimes of a series of sounds of equal intensity (knocking and tapping). Sometimes the sound begins softly and works up to a bang, or it may even rise and fall in intensity. If the sound increases it is usually said to come nearer, if it decreases it seems to recede.

These hallucinations usually occur at night. But as it is only necessary for their appearance that disturbing noises shall be absent they may occur during the day if the patient is in a quiet place; for as light was found to be a disturbing factor in the case of visual hallucinations so external noise seems to prevent the appearance of auditory hallucinations. They always cease when the patient is spoken to, but may begin again when silence is re-established, as in the case of the patient cited above (p. 356).

The feeling-tone that accompanies these auditory hallucinations varies greatly in intensity, but is almost invariably unpleasant. Two patients only described their hallucinations as pleasant. The patient is usually frightened and this fear is usually associated with sweating, with "beating" of the heart and "goose-flesh." One very intelligent patient told me she was much more frightened by the tapping on the wall than if it had been real tapping.

If the sounds are frequently repeated the patient may overcome his fear and may make elaborate observations to discover whether the sounds have any external basis, observations that greatly add to the value of the account.[1]

In all cases these sounds have a curious insistent quality. The patient is unable to listen to anything else unless he be directly spoken to, nor can he distract his attention from the sound as would have been possible had it not been hallucinatory.

[For instances of hallucinations of hearing among the

[1] Example No. 1, p. 405, § 4.

fully reported cases see example 3, p. 412, § 3; example 1, p. 405, § 4; example 2, p. 409, § 4.]

(*C*) *Hallucinations of Smell.*

Hallucinations of smell are the most difficult to investigate, for it is obviously impossible to prove that a smell of which the patient complains has no external cause unless you are present at the time and able to examine his surroundings and the condition of his tongue, mouth and nose at the moment when he experienced the sensation.

But the following case[1] is a good instance of a complete observation. A man, aged 45, suffering with aneurism of the aorta, suddenly developed pain and tenderness over the fifth, sixth, seventh and eighth dorsal areas on the left side, accompanied by marked scalp tenderness over the temporal and vertical regions. The physical signs remained unaltered, but his cough increased. At three o'clock one afternoon I noticed he was sitting up, leaning forwards, evidently uncomfortable, and found he was complaining of a foul burning smell that made him feel sick, "as if someone were burning very foul tobacco or something of that kind." He said the mug of coffee and milk that stood by the bedside stank of it, and that it was all round him. His breath and the small amount of sputum he was bringing up were free from odour. His tongue was clear, and examination of nose and throat revealed no abnormality. His sense of smell was good, and he asked to be allowed to continue smelling the essence of peppermint because it seemed "to drive the foul smell away for a time and to be reviving." When he ceased to smell the peppermint bottle the hallucination again obtruded itself on his consciousness. Ammonia acted even more strongly in the same direction.

He complained that this smell made him feel sick, but he did not vomit. By 4.10 p.m. the whole had passed away and he was able to drink his coffee.

This observation contains all the typical features of an hallucination of smell as it occurs among sane persons suffering from visceral disease.

[1] Case No. 7, table 1.

Such hallucinations are invariably unpleasant, and the various forms they assume may be classified under the following headings :—

(A) *The sulphuretted hydrogen group.* — Under this heading I have placed those hallucinations where the smell was said to resemble "drains," "rotten fish, eggs, or cheese," and "stale greens." The hallucination of smell belonged to this type in seventeen instances.

(B) *The burning group.*—This is a very well defined group, for the patients usually complain of a foul burning smell, or add some further characteristic like "burning bricks," "burning rags." They also complain that their food is "burnt" or "smoky." The hallucination belonged to this group in nine instances.

(C) "*Earthy smell*" *or* "*smell of the grave.*"—I do not know where to place this type, which occurs sufficiently often to make it worth mentioning. Patients deny that it is like a drain, and one thought it not only was around him but clung to his hands.[1]

(D) *The smell of gas.*—This is a peculiarly definite form, for patients will get up and go round with a taper to look for the escape of gas.

(E) *Fæcal.*—Only one patient complained that the smell was fæcal, saying that there was a pot of fæces under his bed in the hospital. But I suspect that either this case should go into group "A," or that several instances included in group "A" should be transferred to this heading.

Hallucinations of sight are prevented by light; those of sound by the noises of the day. In the same way those of smell seem to be checked by strong external scents. A strong external scent, such as that of peppermint, does not blend with the hallucination but drives it away.

As neither light nor sound prevent the occurrence of hallucinations of smell they appear readily in the daylight hours. Thus, although these hallucinations are more difficult to establish, the time of their occurrence makes them

[1] One patient who was a jobbing gardener attempted to describe this form of hallucination of smell by saying "it is like bad soil being turned up from the ground," "as if you had put cut grass into a heap and then turned it over after wet weather."

more amenable to rigid examination than the majority of hallucinations of vision and hearing.

These hallucinations of smell frequently appear in relation to food, and the patient may rise and leave the table, saying that the food stinks. But they are not uncommonly present apart from food and are projected on to and intensified by any food that may be offered.

Thus these hallucinations become a not uncommon cause of sudden apparently inexplicable refusal of food by a patient. Some patients have learnt by repeated experience that these smells "are only fancy" and will put aside the food that seems to stink to be eaten when the smell has passed away.

Nausea is an almost universal accompaniment of these hallucinations, and if food is taken may culminate in vomiting.

Thus such hallucinations of smell are uniformly associated with an unpleasant feeling-tone, but are not accompanied by fear, "goose-flesh," or increase in the rate of the heart's beat. Such patients not uncommonly sweat during the hallucination, but as sweating is a common accompaniment of the nausea that precedes vomiting I am unable to say whether it is associated with the hallucination or with this nausea.

[For instances of hallucinations of smell among the fully reported cases, see example 2, p. 408, § 3; example 3, p. 413, § 4; example 5, p. 418, § 7; example 7, p. 424, § 5.]

§ 2.—Moods.

(*A*) *Sense of Ill-being.*

All of us when ill, and particularly if we are suffering pain, tend to be miserable. We think of the work we should be doing and of all we might have done had we been well. Lying in bed is irksome, and thought chases thought in an intolerable round. Patients of the hospital class worry about the rent that has to be paid and the children at home to be fed.

When in this state we can give reasons for our depression, and it is a relief to talk over our troubles with a friend, and when he has gone we wonder how he has cheered us. Music is pleasant, and some general amusement, such as the theatre, will tend to remove the depression and "help to take us out of ourselves."

But the condition to which I wish to draw your attention as a frequent accompaniment of visceral disease differs markedly from the state I have just described. For it comes on in paroxysms without reason and forces the patient to seek some solitary place. If it attacks him during a meal the patient will rise and leave the table as if to vomit. He will sit in some obscure corner of the ward away from his fellows or will retire to his own room and shut himself in. He will leave his home and seek some solitary place in the fields where he may weep alone and unseen. The public-house and every public place is repulsive to him. If in bed in a large ward he will turn over and hide his face in the pillow or cover it with the sheet. He usually has an intense desire to weep—a desire that in many cases he is unable to control and yet he is unable to say why he is miserable or why he weeps.

To be spoken to only deepens his misery and many a patient who has controlled himself up to that moment will burst into tears when spoken to kindly. Thus as the sister goes her round in the wards it is not uncommon for some patient to avert his head and remain dumb to her questions, knowing that if he answers he will weep.[1]

Music is intensely displeasing to a patient in this state. The hospital patient who is troubled about his work or the support of his family will usually become cheerful again under the influence of some entertainment in the ward; but those who are suffering from the causeless depression I am attempting to bring to your notice become more

[1] To prevent misunderstanding, I in no way suppose that this condition is peculiar to those suffering from visceral disease. It can make its appearance as a primary mental manifestation, and in association with organic or functional diseases of the nervous system. Such cases are, however, excluded from our present consideration and my object will be to describe the conditions under which this mental state may make its appearance in sane persons who suffer from visceral disease.

miserable on such occasions, and I have seen them rise from their places and retire to their beds or to the furthest corner of the ward.

At the same time many are haunted by a vague idea of impending ill. They do not know the nature of this ill nor to whom it will happen. This leads to many curious acts. Thus a workman will pin his name and address inside his coat that he may be known in case of accident. Under the influence of this mood patients in hospital write home to ask what misfortune has happened or which of their relations is ill.

A considerable proportion of us are in the habit of visualising more or less strongly. That is to say, if most of us are asked to think of our home we are able readily to picture the details of some room, we see the colour of the walls, the table, the carpet, chairs, and other familiar belongings. Moreover, the room is either seen illuminated by sunshine or by lamplight, and not infrequently a fire is burning cheerfully in the grate. This faculty is not a prerogative of the educated and well-to-do, but is found widely amongst the more sober though ill-educated members of the working classes.

Now, whereas the normal man is incapable of visualising his home other than coloured, lighted and garnished, one who is in the mood I am describing is haunted by a picture that is in every way the reverse. The room is badly lighted, and often the windows are said to be dirty or sooty; the gay paper has gone from the walls which now seem gray, pictures and ornaments are gone, the grate is fireless, and the furniture in disorder. The room looks "as if we had been sold up," "as if there had been a row in it and everything had been thrown about," "as if it had been deserted and no one had been there for months." In one particularly marked case a patient with phthisis asked his wife why she had made such alterations in the home during his absence?[1]

When the depression has lasted a long while or has recurred frequently, these patients may have a vague desire

[1] Example 7, p. 423, § 4.

that the end may come. But the majority spurn the idea of suicide, and in the very few cases that ever really entertained the idea the motor acts necessary for the fulfilment of the impulse immediately removed all desire for self-destruction. Thus, one woman with phthisis walked out to throw herself into the canal, but before she reached the bridge the impulse had entirely gone. A youth rose from his bed to reach some ferrocyanide of potassium on a shelf in his room; but the act of climbing on to the chair to reach it restored his self-control. It is, of course, possible that people in this condition may commit suicide and so never come to investigation. But I have met with no case where suicide was actually attempted unless other factors came into play in addition to the mood I have attempted to describe.[1]

The duration of this mood may be extremely short. It may arise with great suddenness and pass away with equal rapidity in half an hour. But not infrequently attacks lasting an hour or more recur at frequent intervals throughout a day, to be repeated on the morrow, and the patient will then say his depression has lasted "one or two days." It is, however, not usually continuous throughout many days, but ebbs and flows in attacks of varying duration.

[Amongst the fully reported cases compare example 1, p. 405, § 6; example 2, p. 410, § 6; example 5, p. 417, § 4; example 7, p. 423, § 4; example 8, p. 425, § 3.]

(*B*) *Exaltation.*

But sometimes patients with disease of the heart or lungs are subject to an exactly opposite feeling of exaltation. It is in no sense a delusion but is a mood accompanied by a feeling of physical strength. A feeling suddenly comes over them that they are able to do even more than in the days before they were ill; but immediately any attempt is made to act on this feeling their weakness is brought home to them. Men under the influence of this exalted sense of well-being attempt to lift heavy weights,

[1] Particularly alcohol.

box with fellow patients, or to perform some equally impossible physical task. Women of the hospital class are seized with a passionate desire to wash and scrub, and in hospital will move beds or attempt to lift heavy pails.

Such efforts at once betray the patient's real weakness, and he will then go back to bed or lie down convinced that this sense of increased well-being is founded on no real basis of increased strength.

One patient told me that during this period of exaltation she could sit down and eat enough for two working men, and can enjoy everything she eats.

[Amongst the fully reported cases compare example 1, p. 406, § 7; example 2, p. 410, § 7; example 5, p. 417, § 5.]

§ 3. Suspicion.

When the depression of which I have just spoken has been frequently repeated, or has lasted for a considerable time, an abnormal state of suspicion is liable to arise in the minds of these patients. They believe their friends "want to get rid of them," that their fellow workmen "want to get them the sack," that master, mistress, or superior officer think them "lazy and idle," that the medical officer, sister and nurses think they are shamming or not so ill as they seem to be.

Yet this suspicion is more an impulse than a formed delusion. If they see two people talking together who stand in any relation to them they imagine that these people are talking about them. But they always deny that they have overheard any words to support their suspicion. Under no circumstances do they imagine a definite charge of fraud, impiety, or immorality is made against them, but they imagine that one person is telling the other that they are lazy, idle, good for nothing, or shamming. So vivid is this suspicion that these patients frequently accuse their friends, fellow workmen or employers of desiring to get rid of them and when in hospital they will accuse the nurses of neglecting them.

And yet this suspicion is so directly the outcome of an

emotional state, and so little a fixed delusion, that all the time they recognise it has no basis of logical truth. They will tell you that they know it is not true, but they have an "irresistible feeling" at the moment that it is so. The charge once made and met by a simple negative they are, as a rule, perfectly satisfied. On several occasions when the patient had previously been subject to this form of suspicion, and had made an ill-defined charge of neglect against the nurse, he has told me that he knew it was not true, but the "funny feeling" came over him and he was compelled to make the charge. Such patients are therefore glad to accept a simple denial and for the matter to be allowed to drop.

In this way they differ fundamentally from the majority of delusional cases amongst the insane. For the insane are firmly convinced of the logical truth of their suspicions; whereas the state of mind that I have attempted to describe is characterised by a sense of invasion by an impulse from without to think and say things that are contrary to reason.

Those who have learnt by repeated experience that this suspicion has as little basis of truth as the other "funny feelings" to which they have been subject since their illness came on, as a rule, control themselves sufficiently not to openly accuse those around them of wishing them ill; but before this condition is reached much unhappiness is frequently caused, for it is always concerning those nearest to them and not concerning strangers or casual acquaintances that this suspicion makes itself felt.

[Amongst the fully reported cases compare example 1, p. 406, § 10; example 2, p. 410, § 9; example 5, p. 418, § 11; example 9, p. 428, § 7.]

Chapter II.—The Causes that Underlie these Phenomena.

I have attempted to show that the most various diseases of internal organs are liable to be accompanied by changes in the mental state of otherwise sane persons. It now

remains for us to find the common factor in such diseases that is associated with the presence of these mental changes.

For this purpose I have selected from my records cases of disease of the lungs and of the heart and have divided them into two groups according to whether they showed these mental changes or not. From the one group where these changes were present I have constructed tables 1 and 3; from the other where they were absent tables 2 and 4. No case has been included unless it has been under my own observation for at least five weeks.

EXPLANATION OF THE TABLES.

Throughout these tables—

+ Signifies that the mental change indicated made its appearance when the patient was not in hospital.

X Signifies that it occurred when the patient was under my observation in hospital; but that my attention was not called to its occurrence until more than 24 hours afterwards.

X Signifies that I was present during the occurrence, or that I made a complete examination of the patient's physical condition, skin sensation, special senses, and, in the case of an hallucination, into possible external causes within 24 hours of the event.

The area occupied by the superficial tenderness that was present in each case is given as "Cervical 3," "D. 7," &c. By this I do not mean to imply that Cervical 3 or Dorsal 7 were marked out to their complete extent, but only that more or less tenderness was present within the territory supplied by these visceral sensory segments. Again, "D. 7, 8, 9, 10" is only intended to signify that tenderness was widely distributed within an area bounded above by the usual upper border of Dorsal 7 and below by the lower border of Dorsal 10.

In each case of mitral disease the physical signs at the apex are given in addition to the usual headings—"Mitral Stenosis," or "Mitral Stenosis and Regurgitation." In every case where aortic disease was said to be accompanied by mitral regurgitation it is understood that the 1st sound at the apex of the heart was abolished and the systolic murmur conducted to some point in the axilla or back external to the apex beat.[1]

The numbers in the columns under wasting refer to the gain or loss of weight during the patient's stay in hospital.

On these charts I have not been able to include all the facts observed in each case which might have been supposed to stand in some relation to the mental changes I have described. Nor have I been able to indicate the changes undergone by several of the cases during the ma ths

[1] *Cf.* "Pain in Diseases of the Heart and Lungs," BRAIN

they were under observation. But it is at once obvious on comparing tables 1 and 2, or 3 and 4, that mental changes are not confined to any one form of disease.

Nor can fever be the determining factor in their appearance, for many of the cardiac cases that showed the most marked mental changes were afebrile, and there are as many cases of lung disease with more or less fever on table 4 as on table 3.

Loss of weight cannot be the determining cause of their appearance, for most of the cardiac cases with mental changes had not lost weight, and there are as many cases of lung disease on table 4 that have lost weight as on table 3.

No vascular disturbance will account for their presence, for many of the cases in which compensation was most disturbed showed no mental change.[1]

Nor can they be accounted for by anæmia, for the profoundest anæmias may be entirely free from any of the changes I have described, although they may be well marked in a simple case of chlorosis. Thus out of thirteen cases of simple anæmia five suffered from no pain or tenderness, and were free from any of these mental changes. In the remaining eight, pain and headache, accompanied by more or less superficial tenderness were present, and in these cases one or more of the mental changes I have described made its appearance. Out of eight cases of pernicious anæmia, all of which presented the characteristic clinical appearance and typical blood changes of the disease, seven were entirely free from pain and tenderness, and from any of the mental changes I have so far described. In one only did they make their appearance, and in this case they seemed to be associated with the development of pain of gastro-intestinal origin.

The only factor that is universally present on tables 1 and 3 and absent from tables 2 and 4 is reflected visceral pain.

This type of pain is produced by impulses passing from the affected organ up the fibres of the sympathetic, through

[1] I have been careful to exclude all cases of so-called cardiac delirium which not infrequently accompanies a failing heart; for this psychosis belongs to a different category.

the ganglion of the posterior root, into the central nervous system. A disturbance is thereby set up in those segments that stand in relation with the affected organ. Other sensory impressions entering the same segments are modified, and pain is produced radiating round the body, accompanied by increased sensibility to pain of the superficial structures of the body within the supply of the affected segments.

But it must not be supposed that every case that suffers from visceral reflected pain and its accompanying superficial tenderness must therefore immediately show mental changes. Such an idea would be negatived by the experience of anyone who has suffered from a toothache.

The pain must be of considerable intensity and of some duration. I have prepared a table showing those cases of pulmonary tuberculosis in which the pain was either of small extent, slight intensity or short duration (table 5). It will be seen that although none of these cases suffered from any mental change during their six weeks stay in hospital many of them had experienced one or more of these symptoms before admission. Thus we find that whereas the cases which had at no time suffered from pain were entirely free from these mental changes, such of them as showed some pain either of slight extent or short duration had exhibited some of these phenomena before admission, although they remained throughout their stay in hospital free from any such change.

There are many cases in which the patient has been admitted free from all mental changes but has developed them in association with extension of the disease during his stay in hospital. It was then possible to watch the development or disappearance of the mental changes with the coincident appearance or disappearance of reflected visceral pain and tenderness.[1]

But apart from the fact that where these mental changes were present amongst cases of disease of the heart and lungs pain was a universal concomitant, the tables I have put together tend to the same conclusion by a somewhat different method of reasoning.

[1] Compare example 4, p. 415, § 3 and 4.

For, as I have shown in a previous paper,[1] there are certain conditions, more particularly in cardiac disease, in which reflected visceral pain is usually absent. For instance, I have shown that when in disease of the mitral valves a systolic murmur heard over apex of the heart is conducted to the back and abolishes the first sound over the apex, the axilla and the back, no reflected pain is usually present. Now all the cases[2] that presented these signs are found on table 2, the table that includes those patients who suffered from no mental changes.

But on the other hand, where a systolic murmur is heard over the mitral area accompanied by a short, sharp first sound, with or without a murmur of mitral stenosis, pain will tend to be a feature of the case. Such cases[3] will be found to fall into table 1, which comprises those patients who suffered from some one of the mental changes I have described.

Again, in cases of aortic regurgitation where marked signs of mitral regurgitation are present and the first sound is abolished at the apex of the heart, the characteristic pain of aortic disease is usually absent. Such cases[4] also tend to fall into table 2, which is composed of cases without mental changes.

In a similar way the greater the extent to which the progress of tubercular phthisis tends to excavation and rapid destruction of lung tissue, the less will these mental phenomena tend to be a feature in the case. For rapid excavation of the lungs destroys the nerve endings and thus prevents the production of reflected pain.

Local pain, such as produced by a pleurisy, is not, as far as my experience goes at present, usually associated with these mental phenomena. Thus amongst nine cases of pleurisy in which the pain was of varying severity, not one showed any of the mental phenomena I have described.

Now it might be urged that the pain of a pleurisy is not intense enough to evoke these mental phenomena. But although there is probably much truth in this contention I

[1] "On Pain in Diseases of the Heart and Lungs," BRAIN, 1896.
[2] Nos. 42 to 48. [3] Nos. 13 to 22. [4] Nos. 28 to 37.

incline at present to the view that there is in this matter a fundamental difference between the two types of pain; for just as a local pain of somatic origin, such as that of a burn, is unaccompanied by these mental changes, so an equally local pain produced by an inflammation of the inner lining of the body wall will also be unassociated with these phenomena.

On the other hand, reflected pain, although accompanied by tenderness of the body wall, is of visceral origin. It is not surprising, therefore, that two types of pain so fundamentally different, should be associated, on the one hand with the presence, on the the other with the absence, of these mental changes.

But although reflected visceral pain seems to be the one universal concomitant of these mental changes in cases of visceral disease amongst sane persons, other factors undoubtedly predispose to their appearance.

Sex plays a considerable part in the facility with which they occur. For three times as many women as men had hallucinations during their stay in hospital, although the total number of cases used in this research comprised 102 men and 90 women.

If tables 1 and 2 are examined it will be seen that of sixty-five male cases with disease of the heart or lungs twenty-one showed one or more of these mental changes; whilst of sixty-one female cases thirty-four were affected in a similar manner.

Menstruation tends to favour the appearance of these symptoms, not only owing to the mental changes it produces directly, but also by its effect on visceral reflected pain. For menstruation (1) is in itself a cause of reflected pain; (2) it increases visceral reflected pain of whatever origin and causes it to spread widely; (3) it so lowers the resistance of the central nervous system that visceral reflected pain makes its appearance where it would not otherwise do so. I have therefore refrained from including in my results any phenomena that occurred during the menstrual period or during two days on either side of this period. In every case a strict record was kept upon the temperature chart of the

time and duration of menstruation, and this period avoided in all subsequent compilation. But even so, the full mental effects of menstruation cannot be eliminated, and the fact that a greater number of women than men showed these mental changes must be put down in part to the predisposing influence of menstruation.

Fever also favours the production of these mental changes, not only by decreasing the resistance, but also by causing wide-spread generalisation of any reflected pain that may be already present. Thus one case developed marked reflected pain and superficial tenderness with a sudden rise of temperature that lasted two days. During this period she experienced her first hallucination. But here, as in all similar cases, we have to deal not only with the effect of the fever as such on the mental state, but also its indirect effect due to the sharp increase in the visceral reflected pain that it may produce. This is probably one of the reasons why pulmonary tuberculosis is more commonly associated with these mental changes than cardiac disease. For most cases of phthisis are febrile, and the daily rise of temperature tends to cause an otherwise localised outburst of reflected pain to spread widely.

Anæmia also predisposes to the appearance of these phenomena, not only directly but also by favouring the appearance of reflected pain in answer to very slight visceral disturbances. But the severest cases of anæmia, pernicious anæmia and allied conditions, do not, as a rule, suffer from reflected pain, and the majority remain free from the mental changes described above. But in the last stages many of them develop a form of delirium which bears no relation to the phenomena under discussion.

Loss of weight, especially when rapid, seems to predispose to the appearance of these mental changes, but in no way determines their appearance. But in the last stages of tubercular disease, when profound wasting has taken place, a slight dementia may come on characterised by extreme loss of memory and attention. This state seems to be unfavourable to the development of the changes that form the subject of these lectures, which require a mind

untouched by the lethargy that accompanies extreme wasting.

How far an hereditary taint of insanity plays a part in the production of these phenomena I am unable to say, as I have rigidly excluded all cases in which there was an heredity of insanity or epilepsy.

§ 1.—The Causes that Underlie the Depressed Mood.

Up to the present I have attempted to show that whatever accessory factors may play a part in the production of these phenomena the main factor is the presence of reflected visceral pain accompanied by superficial tenderness.

It now remains to consider each symptom in detail to discover if possible the relation in which each of them stands to such reflected pain.

When describing the various symptoms that went to make up these mental changes, I began with the hallucinations because they were the most obvious deviation from the normal. Now, however, I shall begin with an analysis of the depressed mood, because its relation to reflected visceral pain is in some ways clearer than that of any other of these phenomena.

This depression is in reality an acute alteration of feeling-tone in the direction of ill-being. It is in no sense an intellectual state induced by the thoughts and worry engendered in the patient's mind by the illness from which he suffers. When depressed from such causes the patient may be dull and not want to speak, but can be cheered by a quiet word or by the visit of a friend. He rarely has the desire to cry, and the ill that he expects is well defined; he fears for his work or for those who are dependent on him. Intelligent patients who have experienced both forms of depression are emphatic in their expression of the difference between the two.

Nor can we suppose that this ill-being is part of that general depression which accompanies all pain, for then it would appear with other forms of pain than the reflected

pain of visceral disease. One who suffers from a burn, or from an aching tooth, may be depressed and miserable, because in one case every movement, in the other, the taking of food, is accompanied by an increase of pain. But the misery so induced differs from the mood which makes up so important a part of the phenomena under discussion.

This mood may make its appearance apart from reflected visceral pain as a light form of true melancholia, and also in some neurasthenic states. But we are here dealing only with sane persons, and with such as are suffering from organic visceral disease.

But even sane persons who suffer from no pain are liable to waves of causeless depression. This depression, however, does not, in my experience, come on with the suddenness nor assume the intensity of the mood under discussion. Moreover, music is usually pleasant, the presence of a friend comforting, and a visit to some place of amusement will remove the last traces of this form of depression.

The most marked characteristics of the depression I have described are all associated with a sense that it lies outside reason. It comes and goes causelessly as far as the patient is concerned. It is an obsession dominating his rational life and producing feelings that he cannot understand. He has a sense of impending ill, but has no idea what it is, from what quarter it will come, or whom it will affect. All he feels is that it will affect him in some way to his hurt. He cries, but he does not know why he weeps, nor can he understand how he, who has never wept over serious losses, should now weep for no reason at all. He has a feeling that he has somehow lost control of his mental processes but that his reasoning powers are still intact. He never has the feeling that so frequently makes its appearance in the early stage of an insanity proper—that he is "losing his reason." Thus, when discussing his symptoms, he recognises that something of which he is ignorant has caused him to lose control, and that the results of this loss of control have been the appearance of baseless misery and baseless fears.

This feeling of ill-being is in no way an emotion proper, for its main characteristic is the absence of projection. In

anger we are angry at something or with somebody, and it is very doubtful if we are capable of anger without projecting it on to an object. This projection I believe to be a necessary part of every true emotion, such as anger, love, hate, and the like.

But on the other hand, in the state I have attempted to describe, projection is absent or so slight that it is doubtful if, when it occurs, it is not a secondary change. For such a state we require a word in English pyschological terminology. I propose, then, to use the word "mood" to indicate a state of mind in which consciousness is dominated by feeling-tone but where the resulting state is not projected.[1]

But in order that this mood may be produced the pain must be of considerable intensity or duration, or must occur frequently. It is not sufficient that a patient should suffer from even considerable pain of the reflected visceral type if he has been healthy up to the time of its origin. The oftener visceral pain has appeared the more easily will its reappearance be accompanied by the mental changes I have described.

But not only are the duration and intensity of the pain of importance, but also the number of segmental areas affected. For the greater the area involved in pain and superficial tenderness the more certainly will mental changes make their appearance.

Again it would appear that the presence of pain and tenderness over some of these segmental areas is more likely to be accompanied by the sense of ill-being, than where the pain and tenderness affects other areas. Thus pain and tenderness over any of the abdominal areas is peculiarly liable to be associated with this sense of ill-being, whilst pain and tenderness over the upper thoracic areas must be relatively severer and of longer duration before it becomes associated with depression. A disease that causes

[1] The best example of the difference between a mood and an emotion is given by the two types of fear. In fear, an emotion, we are afraid of a thing. But there is no doubt that a state of fear can exist in which there is no fear of any particular object. This condition, which is common in the insane and in children, is a true mood. I believe it can also exist in visceral disease, but is usually so closely mixed up with hallucinations or other manifestations that it becomes peculiarly difficult to investigate.

reflected pain over the upper thoracic areas, such as uncomplicated aortic disease, is less likely therefore to be associated with depression than mitral stenosis with regurgitation, which is under certain conditions liable to produce pain and tenderness over the seventh, eighth, and ninth thoracic areas. For the same reason acute disease of the upper lobe of the lung is less likely to be accompanied by depression than affection of the lower lobe. For affections of the lower lobe are also liable to be accompanied by pain and tenderness over the seventh, eighth and ninth dorsal areas.

But these areas are peculiarly associated with gastric disturbances, and for this reason painful affections of the stomach are most frequently of all accompanied by this form of depression.

Many a case of phthisis will remain entirely free from depression until a sudden fresh affection of one lower lobe, or the onset of some gastro-intestinal complication causes a sudden outburst of pain and tenderness over some of these lower dorsal areas.

In the same way a case of chlorosis may remain entirely free from all mental changes until reflected pain makes its appearance in consequence of some gastro-intestinal irregularity.

But headache alone may be accompanied by this condition, if sufficiently prolonged and sufficiently severe. Thus the intense pain of herpes zoster ophthalmicus may be accompanied by typical depression, as I shall show later when discussing the causation of hallucinations. But I am inclined to think that headache of the reflected type, when unaccompanied by similar pain and tenderness over the trunk, is much less likely to be accompanied by depression than if the pain and tenderness were situated over the abdominal areas.

Thus, in order that this depression may make its appearance, it is necessary that the pain present should have been of this visceral reflected type; it must have lasted a sufficient time, and have reached a certain intensity. The time and intensity required depend in any one case on several acces-

sory circumstances, such as the sex of the patient, the presence of anæmia or fever, and a certain inherent resistance natural to the person affected.

§ 2.—The Causes that Underlie the Feeling of Physical Exaltation.

But in addition to a depression I described a curious sense of physical exaltation that is present in some of these cases. It is not so universal as the depression, and, as it manifests itself only in a sense of well-being, is much less easy to investigate.

It is accompanied by no actual increase in physical strength, for a patient who gets up from his bed intending to clean the house down, is obliged to return to it, overcome by the effort of putting on his clothes.

However, it is not in any sense a delusion of grandeur, for the patient does not imagine he is peculiarly gifted intellectually or in relation to his surroundings. He does not believe he belongs, or should belong, to any social rank other than his own. He is always himself, but he is himself young and strong again. He feels the sense of well-being that exists in the normal man exaggerated. This state is therefore the exact converse of that sense of ill-being which made up the depressed mood.

Now there is much reason to believe that the more definitely a sensation is projected, the less is likely to be the feeling-tone by which it is accompanied. Thus the senses of smell and taste in which external projection is slight are accompanied by more feeling-tone than the senses of sight, touch and hearing. In the same way the ill-defined sensations such as those of the viscera come to consist in consciousness of little more than a feeling of well- or of ill-being.

Visceral pain will intensify this sense or ill-being, and produce the pathological state I have described as the depressed mood. If the pain diminishes and the depression passes away rapidly, a rapid reaction will take place. The patient will swing over into a condition not of normal but of exaggerated well-being.

If this explanation for the exaltation be correct it should stand in close relation to the cessation of the depression. This is so in a large number of cases. Thus in example 5, p. 417, § 5, it appeared under the following conditions. All the afternoon he had had pain in the head and chest, and during this time he had a slight attack of depression. The pain ceased at five o'clock, and then there came over him a feeling of physical strength and well-being. It came on quite suddenly and lasted about an hour. He began to make his bed, feeling he wanted to lift it, or something equally heavy. Then he boxed with a neighbouring patient. This taught him how weak he was, and he went back again to bed.

But although the exaltation occurs in its most complete form shortly after the sudden disappearance of an attack of depression, it will make its appearance if the pain suddenly improves, even if that pain has not on that occasion been accompanied by a definite attack of depression.

But apart from an attack of depression it is probable that a sense of exalted physical well-being can arise in another way. Within the space of each day the underlying feeling tone varies even in absolutely normal people. These variations are, however, so slight, and are so repeatedly covered by frequent alterations in the conditions of life that they escape notice. But to those of monotonously regular habits these variations throughout the day are appreciable.

Now this tone probably depends on the activity of the viscera, an activity that takes place outside consciousness, excepting for the feeling-tone it engenders.

Pain of the reflected type calls up the whole field of visceral activity into consciousness, and it is probable that those who are the subjects of these mental changes are thereby rendered more susceptible to normal alterations in visceral feeling-tone which would otherwise have passed unobserved. This would seem to be one cause of the exalted sense of well-being that sometimes appears in cases of visceral disease and accounts for the fact that this form of exaltation not uncommonly makes its appearance in the morning when the patient rises from bed.

The duration of this condition is generally short, but it probably helps to furnish instances of the well-recognised hopefulness of those suffering from phthisis. But, strictly speaking, the "spes phthisica" is a more permanent mental condition of a different origin and nature. Many a case of tuberculosis is practically ignorant of his condition. For he suffers from no pain. His cough is not more troublesome than it has been for a long while. He knows nothing of his temperature and of the physical signs of profound disease that have such a deadly significance for those around him. His is a condition of nescience, and when he talks of recovery, of returning to his business, we, who know how gravely the lungs are destroyed, wonder at his hopefulness.

This hopefulness, except in those cases that experience the feeling of physical exaltation, is based simply on ignorance of the increasing gravity of the signs of disease. If such a patient enters the hospital he quickly learns the significance of the fever indicated on the temperature chart that hangs above his head. The weekly weighing reveals to him his loss of weight. From the words or actions of doctors or students he gathers that they recognise marked signs of disease within his chest of which he is entirely ignorant. All these factors serve to destroy his exaggerated hopes, and many cases that enter a hospital hopeful to an extent that appears almost to amount to a delusion, leave it with a just sense of their condition.

Take, for instance, a man of 54, suffering from advanced tuberculosis of both lungs, with extreme signs of cavitation over the upper half of the left and consolidation of the upper lobe on the right side. His temperature lay mostly between 101° and 102°. He was extremely intelligent and particularly fond of reading. He had no pain and very little cough. He was emaciated, but the loss of weight had been so gradual it had not troubled him. On admission to the hospital he was hopeful and talked about returning to work; but when he went out, though still smiling, he had lost his exaggerated hopefulness. He said, "I know I shall not get well. I am losing weight and my temperature is always bad. I am going to make myself comfortable at home. I

have arranged my sofa so that I can see to read by day and a gas jet so that I can read when it gets dark, and I think I shall spend a very pleasant three weeks—for that's about the time I think I shall live." Three weeks and two days after discharge he died quietly, reading his books up to the last.

Spes phthisica, when not a manifestation of physical exaltation, seems then to be based on a failure to comprehend the gravity of the disease—a failure due to the patient having no symptom that will serve to show him how rapidly progressive are the physical signs of disease.

For this reason cases of tuberculosis in which the larynx is the main focus of disease are, as far as my experience goes, mostly melancholic.[1] They do not as a rule suffer from much pain of the visceral reflected type, and are therefore free from the paroxysmal attacks of causeless depression with a sense of unknown ill impending. But with an incessant cough and progressive loss of voice they early realise the seriousness of their condition. Take as an instance the following case :—A man of 24 had been ill for two years with cough and loss of weight. He first lost his voice eighteen months before I saw him. On admission there were signs of phthisis at both apices, and an old pleurisy at the left base. His voice was reedy and the larynx showed the typical tubercular changes. His temperature rose to 101° every night. He was entirely free from reflected visceral pain or headache. He was frequently depressed, and felt as if he was too ill to do much. He sat still and said nothing, but liked people to talk to him if it did not involve his answering, and much enjoyed being read to. He constantly worried lest his voice should never be well enough for him to return to work. He had no feeling of impending ill or desire to cry. He much enjoyed an entertainment consisting of music and songs that took place during his stay in hospital, and played well at draughts, feeling happier if he could win a hard game.

There is, however, another condition which must not be confused with the sense of exaggerated physical well-

[1] *Cf* cases 126, 127, 128, and 130, table 4.

being that I have described. Many cases of aortic disease seem to be liable to attacks of excitement, in which they flush. Then they may burst out into a paroxysm of anger or uproarious excitement. Occasionally during such attacks the men become violent and will strike another patient. One male patient with aortic disease told me he frequently had a feeling that he must destroy something; he fought against it, but could not control himself, and had pushed all the knives off the table so that he might not be tempted to use them against one of his children; his wife then recognised his condition and sent the children away. He was terrified lest the temptation should overcome him some day to do bodily harm to one of his children.[1]

Again, let us take the following case of a young woman of 19 years of age, suffering from disease of the aortic valves without implication of the mitral as a sequel to several attacks of rheumatism. A double aortic murmur of the usual type was audible, abolishing both first and second sounds over the aortic area. The first sound in the left axilla was long and booming. The pulse was characteristically regurgitant.

She was a bright, cheerful girl, quick in her movements, and when there was no one to check her would run about the wards. At times she became extremely excitable. For instance, if, when she was washing up plates, another patient said anything that annoyed her, her face flushed violently, and she said what first came into her head. Occasionally her nose bled during this excitement. She always felt ill afterwards, and generally had to go to bed. Occasionally she would break out into wild fits of laughter, in which she could not stop. These also were followed by a feeling of illness.

This condition seemed to bear no relation to the reflected visceral pain from which the patient also suffered occasionally.

Thus in conclusion it would seem that the exalted sense of well-being, to which persons with visceral disease are liable, may arise from many different causes.

[1] Case 9, table 1.

(1) It may be the direct contrast to a mood of ill-being induced by visceral pain.

(2) Those who suffer from visceral pain are liable to an accentuation of the normal waves of well- and ill-being that apparently stand in connection with the feeling-tone connected with visceral activity.

(3) The apparent exaltation may be due to ignorance on the part of the patient of the gravity of his condition. To this group belong many of the cases of so-called "spes phthisica."

(4) Patients suffering from disease of the aortic valves are liable to attacks of excitement apparently of vascula origin.

§ 3.—The Causes that underlie the State of Suspicion.

I pointed out that patients with visceral disease not uncommonly suffer from an ill-formed state of suspicion. They imagine their friends want to get rid of them, or are talking about them, and that the nurses wish them no good.

Comparison of a number of cases of cardiac and pulmonary disease showed that this symptom belonged to the group of mental changes that accompany pain of the reflected visceral type, for it is entirely absent in that group (tables 2 and 4) in which all pain of this kind was absent.

But unlike the depression it probably seldom, if ever, appears alone. In every case I have so far come across it was accompanied or preceded by the depression, and if tables 1 and 3 are examined it will be seen that there are many cases, where although other mental changes are well marked, this suspicion had not made its appearance.

It seems to take its origin directly out of the state of ill-being or depression; for one of the most marked features of this state of ill-being is the sense of impending ill. But the patient is ignorant what this ill may be, and on whom it will fall, except that in some way it will affect him. With this is associated a sense of his physical worthlessness. From this state it is but a small step to the idea that those around think meanly of him, that they believe he is not so ill as he

makes out, that he is lazy. Seeing two persons talking together, who are associated with him either at his work or by friendship, he will think they are talking about him, and if about him they will surely be telling one another what he believes they think. They will say he is lazy and that he must be got rid of from his work.

Such patients have no feeling of moral unworthiness, and therefore, when a prey to suspicion, they have no delusion that they have committed a crime or a sin, or are in any way shunned by their fellows.

Thus the form assumed by the suspicion in these cases of visceral disease among the sane is fundamentally different from the commonest form of suspicion amongst the insane. For the insane patient thinks that those around him believe he has committed some act either against religion, the law, or social custom. He believes that every passer-by in the street thinks he has profaned the mass, poisoned his father, or acted as a blackleg in his trade.

Again, another difference comes out between the two states when an attempt is made to reason with the patient, for the insane patient will pile up reasons to show that his belief is true. "The last time he went to church no one would sit near him;" the policeman up his street is "always smelling about his place;" the workmen on his job "won't speak a word more than they are obliged" to him. Point out to such a patient that these beliefs are incorrect, or bring overpowering arguments to prove their falsity, and he will leave you silenced but not convinced.

On the other hand the same patient with suspicion born out of a sense of ill-being of visceral origin is never certain for long together that people are against him. The idea comes and goes in such an inconsequent manner that even when he keeps it entirely to himself he is frequently not quite certain of its truth. If, however, he should make a complaint to his relations, friends, fellow-workmen, master, or to some hospital authority, a simple negative entirely satisfies him. When such patients have complained to me about the way some nurse is against them I have often asked, "Do you believe what you say is true?" Frequently

they will answer that they don't know what to think. At one moment it seems true, and at another false. Some of the most intelligent seem to look upon it as something that seizes them from without, as if their reason were invaded by something over which they had no control.

No reasons are necessary to prove to these patients that what they hold is false. A simple denial will satisfy them. It matters little whether this denial comes from the person whom they believe to be against them or from some superior not implicated in the suspicion, such as their employer or physician. It is as if a definite authoritative statement from without were enough to enable their reason to gain the upper hand of this non-rational belief. Thus, usually, they express themselves completely satisfied with a simple denial, in extreme contrast to the insane who, though compelled by the weight of arguments to silence, are still unsatisfied.

In its causeless or inconsequent onset, and in the sense of loss of control by which it is accompanied, it closely resembles the state of ill-being out of which I have tried to show that it springs.

§ 4.—What is the Determining Factor Underlying the Appearance of Hallucinations?

We have seen that, although there are many predisposing factors, the one necessary concomitant of these phenomena is pain of the reflected visceral type. It will now be well to consider whether we can differentiate further the causes underlying the appearance of the hallucinations that form so important a part of this mental state.

For instance, are we to consider that one or more hallucinations will necessarily appear because the patient has become subject to paroxysmal attacks of depression and suspicion; or is there some other determining factor necessary before hallucinations can make their appearance? For, as I have already shown, the exaltation and suspicion may in many cases be deduced from a primary depression. But the hallucinations seem to stand in no such relation. They occur in a comparatively small proportion of the cases

in which the other symptoms are well marked. In no case do they appear without the depression having already made its appearance, but hallucinations of vision are in no way necessarily contemporaneous with an attack of depression. Thus there would seem to be some additional factor that determines the appearance of hallucinations during the existence of this mental state.

Some patients volunteer the statement that the appearance of an hallucination is accompanied by a bad headache, and most complain that "the vision," or "the funny sounds," or "the filthy smells," always "make my head ache very badly."

Moreover, in no case where I have made a complete examination within twenty-four hours from the occurrence of an hallucination was scalp tenderness of the reflected visceral type absent.

Let me digress for a moment to recall to your memory how it comes about that diseases of the organs of the chest and abdomen may be accompanied by reflected pain in the head and tenderness of the scalp.[1]

All the thoracic organs and most of those in the abdomen receive fibres from the vagus. Impulses pass up these fibres to the head, and according to the usual rules that govern the appearance of reflected pain, should be reflected along the somatic branches corresponding to the visceral afferent fibres of the vagus. Now Gaskell suggested that part of the trigeminal or fifth nerve corresponded to the somatic branches of that set of nerves of which the vagus represents the visceral branches. And as a matter of fact pain impulses ascending the vagus from organs in the thorax and abdomen actually cause pain and superficial tenderness over certain portions of the scalp. But each area of pain and tenderness on the scalp does not stand in necessary relation to any one or more organs of the thorax and abdomen. We cannot say that one area is connected with the heart, another with the lungs, and so on. The relation is a segmental one, and each segmental area or group of areas on the trunk stands in

[1] *Cf.* "On Disturbances of Sensation with especial Reference to the Pains of Visceral Disease." Part ii., Head and Neck. BRAIN, 1894, p. 436.

relation with an analogous area or group of areas on the scalp. Thus it is immaterial what organ has been disturbed to produce, for instance, the seventh dorsal area on the trunk. So long as that area is present in a well-marked form there will be a tendency for tenderness to make its appearance over the temporal region of the scalp.

In this way the third and fourth cervical and all the areas from the first to the tenth dorsal are correlated with tenderness on the scalp.

Expressed broadly, this relation may be said to be that the higher the area on the chest the further forward its correlated area on the scalp. Thus the third and fourth cervical and upper dorsal areas will be associated with areas of tenderness over the nose and forehead; the seventh, eighth, and ninth dorsal with tender areas in the temporal, vertical and parietal regions; and the tenth dorsal with tenderness over the occipital region.

Thus affections of the organs in the thorax and abdomen will not only be accompanied by reflected pain over areas of the trunk, but also, if sufficiently intense, by headache and scalp tenderness.

Now the Gasserian ganglion must play a part in the production of this reflected pain and tenderness. It therefore seemed possible that so-called herpes zoster ophthalmicus, a disease accompanied by an irritative lesion of the ganglion, and associated with exquisite pain over the forehead, might also be accompanied by hallucinations. This turned out to be the fact, for out of eleven cases of herpes zoster ophthalmicus five had been the subjects of typical hallucinations of vision of the type I have already described. One saw a large white face at the bottom of the bed, one a "corpse," two saw figures standing beside the bed "misty, as if wrapped in a cloak," and one, even whilst walking the room at night on account of the pain, frequently saw a "shadow," without a face or limbs, standing in the room. In none of these cases was the cornea or iris affected by the inflammatory process. In no case had the patient ever experienced an hallucination of any kind on any previous occasion.[1]

[1] *Cf.* Example 10, p. 429.

The presence of hallucinations of vision in these cases of herpes zoster ophthalmicus seems to show that the determining factor for the appearance of hallucinations is not the intensity of the general psychosis; for in these cases of herpes zoster the other elements of the psychosis, depression and suspicion, were but slightly marked, and under ordinary conditions, hallucinations being the last element of this psychosis to make their appearance, we should scarcely have expected them to be present. There must therefore have been some unusual factor in such cases. This I believe to be the fact that no pain was present elsewhere, except within the territory of the superior division of the trigeminal.

Thus it would seem that headache of the reflected visceral type is the only necessary concomitant to the appearance of hallucinations.

But in order that hallucinations may make their appearance the pain stimulus must have a certain bulk; it must have reached considerable intensity. If the pain suddenly makes its appearance in a person who has been for a time free from pain, this rapidity of appearance seems to more readily predispose to the appearance of hallucinations than if the pain had reached the same or even greater intensity more slowly.

If, at the same time, the resistance is lowered, as by fever or anæmia, an attack of headache seems to more readily conduce to the appearance of an hallucination than if neither fever nor anæmia had been present.

Not only must the headache be of sufficient intensity and the resistance lowered, but the appearance of hallucinations is very much aided by concomitant pain and tenderness on the trunk—for this pain and tenderness alone can be associated with depression, and the existence of this depression is a sign that the mental control has been broken. Thus many cases of chronic headache in which pain of the reflected visceral type is produced from other causes than disease of the organs of the thorax and abdomen may never suffer from hallucinations of any kind. But cases of disease of the organs of the thorax and abdomen that cause less

severe and less continuous headache may be accompanied by hallucinations, owing probably to the way having been paved by the concomitant depression.

Thus headache of the reflected visceral type, particularly when accompanied by similar pain and tenderness on the trunk, is liable to be associated with hallucinations.

What determines whether the hallucination shall take the form of sight, sound, or smell?

It might be thought that the headache tended to be associated with what might be called a general hallucinatory state and that the form assumed by the hallucination was determined by the condition of some particular sense organ. An analysis of the cases where an hallucination occurred during the patient's stay in hospital shows that this is not the case. For in no case were hallucinations of sound or smell accompanied by any abnormality of either the ear or nose, nor was hearing or smell permanently affected. The only fault that was occasionally present in the eyes of those patients who had experienced an hallucination of vision was some slight error of refraction. This could in no way be responsible for the hallucination for it was absent in most of the cases.

Thus it is certain that no permanent error in the sense organ implicated was the determining cause of the form assumed by the hallucination.

It might be thought that the headache was accompanied by a general hallucinatory tendency, and that a patient who was once the victim of this psychosis would develop hallucinations of smell when brought face to face with food; hallucinations of hearing when the surroundings become free from noise; and hallucinations of vision in the dark. And there is little doubt that this view is in many ways correct.

But if thirty-four cases are put together where a patient experienced an hallucination whilst under observation in hospital, there were only four cases in which that patient, at any time, whether in or out of hospital, had experienced all three forms. In thirteen cases a second hallucination had been experienced in addition to the one observed in

hospital, and in seventeen cases one form of hallucination only had ever been present.

But in a large number of these thirty-two cases the same form of hallucination had been repeated, not uncommonly, several times.

Thus, although the presence of headache of the reflected visceral type tends, under suitable conditions, to be accompanied by hallucinations, there seems to be some factor which determines the form that shall be assumed by the hallucination that appears.

Theoretically I was led to suppose that the form assumed by the hallucination depended on the position of the headache for the following reasons :—

We have, so far, spoken as if pain and tenderness over the scalp was only produced by disease of organs of the thorax and abdomen. But disease of such organs of the head as the eye and the ear will also cause pain and tenderness over the same regions. In fact, the whole forehead is peculiarly associated with the pain produced by diseases of the eye as are the vertical and parietal regions with painful diseases of the ear, more particularly such as are due to rise of tension from pent-up discharge. Thus, from a psychical aspect, there is a close relation between the forehead and the eye, the vertical and parietal regions of the scalp, and the ear.

Hence, on theoretical grounds, it appeared possible that, although these mental changes when present tended to be accompanied by hallucinations, the form assumed by the hallucination might depend on the position of the headache and its accompanying scalp tenderness.

The material at my disposal is too small to prove this theory, but a close examination of the sensory changes that accompanied the thirty-four hallucinations which occurred whilst the patient was under care in a hospital do not go against this view and in many cases tend to support it.

For out of nine visual hallucinations, superficial tenderness of the visceral reflected type was present over the forehead in every one, and in four the area of tenderness did not extend on the scalp further back than the forehead.

In twelve cases of hallucinations of hearing, tenderness was present over the vertical and parietal region in all, whilst in six it was confined to that territory of the scalp.

Moreover, support is given to this view by the fact that in the five cases of herpes zoster ophthalmicus, where hallucinations were present, in every case the hallucination was one of vision.

Thus, if we assume that when this psychosis is established the form assumed by the hallucination depends on the position of the headache or the area of the scalp tenderness, we can thereby explain the occurrence of hallucinations of vision and hearing. But those of smell still remain a difficulty; for in every case where an hallucination of smell occurred whilst the patient was under observation the headache was mainly in the temples, and superficial tenderness was present over the temporal regions on one or both sides. In six of these thirteen cases the tenderness was confined to the temporal region.

But I think the following considerations help us to understand the association between headache accompanied by superficial tenderness in the temporal region and hallucinations of smell.

These hallucinations are uniformly unpleasant. In no single instance have I ever been able to discover even traces of a pleasant hallucination of smell in sane persons suffering from visceral disease who were not delirious. Moreover, the patient always states that the smell "made him feel sick," "turned him off his food," or the like.

Now anyone who will examine his sensations when he is suffering from nausea, before vomiting has actually occurred, will recognise to what an extent the unpleasant aspect of the sense of smell is increased. Scents that it is true contain some unpleasant element, but which under normal circumstances are indifferent or even pleasant, become not only stronger but at the same time definitely repulsive. Everyone who has been sea-sick knows how offensive his friend's pipe becomes, and at the same time at how much greater a distance he can smell that pipe. And yet, perhaps, under normal circumstances there may be no smell that is

pleasanter to him. The tarry smell of the ropes, and the smell of food are not only increasingly unpleasant, but seem to be actually stronger than before the feeling of sickness came on.

Thus it may be that there is a close association between the vomiting centre and that for smell; and it is easy to see the reason for such an association, for it is obviously protective, and serves to guard us against the ingestion of abnormal or improper food.

Now there is also a close association between the temporal area of the scalp and vomiting; for the temporal area seems to stand in relation mainly with the sixth and seventh dorsal areas on the body, the areas within which pain and tenderness make their appearance in most painful affections of the stomach. Moreover, when these areas of tenderness are present, from whatever cause, in considerable intensity, taking food is almost immediately followed by nausea and a desire to vomit.

Thus the temporal area of the scalp stands in relation to nausea and so indirectly to an exaltation of the offensive aspect of smells.

When, therefore, the psychosis I have described is once established and the mental field has become turned to visceral impressions, the presence of pain of the reflected type and tenderness over the temporal area, whatever its origin, will not only tend to excite nausea, but also, under favourable conditions, to produce an hallucination of smell.

In this way the presence of food by inducing nausea aids the development of such hallucinations of smell.

But it must not be supposed that the offensive smell of which the patient complains bears any direct relation to the scent of the food. For there is no element in the smell of cocoa and milk that corresponds to "a foul burning smell like very foul tobacco" any more than there is anything in the smell of roast meat that corresponds to fæces. Moreover, in most cases, the patients say that the smell is not confined to the food but is all about them, and one thought it was on his hands.

It is uncommon to find two hallucinations occurring

together at the same moment. One patient told me she heard tapping at an upstairs window and, looking, saw a white face. But in the great majority of instances, if a patient suffers from hallucinations of more than one kind, these hallucinations occur on entirely separate occasions.

This bears out the contention that the determining factor in the form assumed by the hallucination is the local intensity of the headache and scalp tenderness.

Widespread scalp tenderness unaccompanied by marked local headache is unlikely to be associated with the occurrence of an hallucination. But not uncommonly the patient has long suffered from widespread scalp tenderness which, at the time of the hallucination, is reinforced by a rapid and vehement outbreak of headache over some particular area of the scalp.

Thus a patient with a progressive disease such as tubercular phthisis will tend to suffer from manifold hallucinations, for the area of pain and tenderness on the trunk shifts with the progress or varying incidence of the disease. At the same time the part of scalp affected and the greatest incidence of the headache will also shift and thus, when once the psychosis has been established, hallucinations of different kinds will make their appearance during the course of the disease in the same patient in association with the shifting incidence of headache and scalp tenderness.

Chapter III.—Changes in Attention and Memory.

So far I have made no mention of the condition of memory and attention in those who suffer from visceral disease. This is because the causes that underlie the changes that occur are more complex and more difficult to unravel than those which underlie the symptoms of which I have already treated. It is impossible to place a series of cases that suffered from reflected pain into the one group and those that had no pain into the other group and to show that attention and memory were altered in the one and not altered in the other.

Many patients recognise the profound loss of attention that may accompany disease of the heart and lungs. First they notice that they cannot keep their attention on a book or newspaper even though they may be extremely fond of reading. They can no longer play chess or draughts and lose all interest in cards. Women find they cannot sit and sew as they were wont to do, though they never lose the power of knitting, which appears to be a purely mechanical process.

Memory for the remote past is not affected except in those extreme cases where the patient becomes slightly demented as, for instance, in some extreme and long continued cases of pulmonary tuberculosis. Patients who have suffered from some disease since childhood that has persistently impaired nutrition will tell you they have always had a bad memory. Some cases of congenital heart disease or of adherent pericardium are unable to remember when or where they went to school. Here, however, we have not to deal with the destruction of a memory of remote events but rather of an absence of memory for recent events that has persisted throughout the greater part of the patient's life.

If the disease comes on in adult life, when a memory already exists well stored with records of past events, the remote past is left untouched. Patients remember where they went to school, the character of their teachers, where they first went to work, and other incidents of remote memory.

Any diminution that takes place lies within the field of recent memory, and more particularly within that portion of it that is covered by their illness.

If a man has a special facility based on some particular development of memory, this aptitude is the first to be weakened. Thus one of my patients[1] was a porter at a tea warehouse. He prided himself on being able to send a parcel to any part of the United Kingdom without applying to a time-table or address book. This faculty became so well known that his friends used to search out difficult questions to put to him. Twelve months before I first

[1] Case 70, table 3.

saw him he developed pulmonary tuberculosis and began to waste, losing in all two stone. He also suffered from reflected pain and headache with each of the bronchitic attacks that signalised the advance of his disease. When I saw him there were signs of consolidation at the left apex, with early invasion of the lower lobe of the left lung. During a stay of six weeks in hospital his temperature was never over 99·4° F. For twelve months his memory had become very bad; for when told to send goods to any place at a distance he was obliged to look it up in a book. This has caused him great annoyance, for it was of this faculty that he was particularly proud.

Another male patient[1] showed exactly similar changes with the onset of tuberculosis of the lungs. He was 30 years of age, and for a year had suffered from a cough with occasional hæmoptysis. He had lost weight considerably, and lost two stone in the month that preceded his admission. His temperature was never above 99·4° F. during his stay in hospital. There were signs of consolidation at both apices, extending into the upper part of the lower lobe on the left side. He suffered from a good deal of reflected pain accompanied by superficial tenderness.

He was an upholsterer by trade, but at the time of his illness was also a betting man. When his illness, that he took to be "just a common cold," first came on he began to be troubled by a curious loss of memory. He could not remember the names of the horses or the odds in any particular race, and forgot how any particular horse had run in previous races. He repeatedly overlaid his book, could not remember his slips, and actually paid out money where it was not due. So bad did this loss of memory become that he was obliged to give up his profession and stick to his trade as an upholsterer.

But in addition to such special aptitudes memory is frequently diminished in other directions. Told to do a thing, the patient either entirely forgets or comes back to ask what it is he is to do. A waitress with mitral stenosis could not carry more than one order in her head at a time.

[1] Case 65, table 3.

Closely allied to this is the difficulty in remembering an intention. Women go shopping and find they cannot remember anything they went for. They put things away and have no idea where they put them.

A deeper level of disturbance is shown when the patient forgets things he has seen or heard. A patient who could come home from a concert or musical play, and reproduce the airs to which he had listened, found that when his illness began he could not remember either what he had seen or heard. Many as they walk along the street see things they intend to tell, but when they reach home have forgotten what it was they saw.

A large number of patients with cardiac or pulmonary disease forget what they read; but this seems more directly associated with lack of attention than any of the other memory changes. They can read a column of the newspaper, or a few pages of a book again and again, and have no memory of what it contains. I have seen a patient with an aneurism read over with the greatest interest a long account of the murder that provided the excitement of the moment. But the same evening he was quite unable to tell another patient anything about what he had read.

The loss of due appreciation of time and of locality that forms so prominent a feature in cases of so-called confusional insanity is never present unless there has been marked alcoholic excess in addition to the visceral disease. The patients I have studied for this work always knew the day of the week, the month and the year. Taken round the ward or round the garden, they could find their way back again without difficulty. It is true that a few patients with cardiac or pulmonary disease cannot remember the way to places they knew quite well. But this appears to be a true loss of memory, and in no way resembles that loss of orientation so characteristic of so-called confusional insanity. Taken to the same place they could find their way back, but they fail when attempting to recall the way by which they went and returned.

These changes in memory and attention cannot be associated, like the other mental symptoms I have described,

with reflected pain only. For although a considerable proportion of the cases in which reflected visceral pain was a marked feature showed more or less profound loss of attention and memory, there were also many cases without such pain that showed similar changes. [*Cf.* Tables 1 with 2 and 3 with 4.]

However, in those cases of cardiac disease where reflected pain, wasting and fever were absent, attention and memory were unaffected.

But if pain is not the only cause neither can continued fever be associated solely with this loss of memory and attention, for many of the cardiac cases in which it was most marked were afebrile.

Nor can wasting account for all cases, for many of those cardiac cases which show most profound loss of memory and attention show no wasting.

And yet wherever reflected pain is a marked feature of the disease, wherever fever is prolonged or wasting acute, then these changes in memory and attention will be marked.

Attention is the direction of thought at any moment to this or that special object in preference to any other. In order, then, that the power of attention should be unimpaired, it is necessary that the field of consciousness should not be dominated by any one presentation. Whatever the origin and nature may be of a presentation that dominates consciousness, the existence of such a state produces diminished power of attention. The mind is no longer free to react to each successive sensation or idea—its interrogative aspect is gone.

Thus the insane patient, who believes he is about to be hanged, pays little attention to what is going on around him. In the same way a sane person who is suffering from the pain of herpes zoster ophthalmicus will be unable to give attention to his work or to reading.

But these pain sensations do not cause a diminution in the power of attention only by the fact that they enter into consciousness as pain impressions. For in many cases where reflected pain is associated with marked loss of attention, consciousness is dominated not by the pain as

such, but by the changes in feeling-tone with which that pain is associated. The patient does not complain of the pain, but rather of the depression that has come on since his illness.

It is in this way that we can account for those cases where attention has failed since the development of reflected pain, but where fever, wasting, or anæmia are absent.

On the other hand there is no doubt that where fever is prolonged, wasting, a prominent feature, or anæmia well marked, attention will fail simply from the rapid fatigue that occurs where the vitality of the nervous system is lowered.

Now, as I have already pointed out, memory may be lost in consequence of diminished attention. A patient will not remember what he has seen or heard, or where he has put things, simply because during that time his attention has not been fixed on what he has seen or heard, or on what he is doing. Thus the domination of consciousness by some continuous presentation or fatigue, due to lowered vitality of the nervous system, will produce loss of memory for events that occurred during the period of the illness by causing loss of attention. Images that should have been stored up are not registered, and memory of this period does not exist.

But in visceral disease it is not only from lack of attention that memory is diminished, for memory is not only lost for the actual period of the illness, but also for a time preceding its onset, in which memory images have been certainly stored in the normal way.

The first cause of this actual loss of already formed memory images is the lowered vitality of the nervous system, produced by continuous fever or profound wasting.

I take as an instance of such loss a very intelligent man of thirty-six, an insurance agent, who died from ulcerative endocarditis.[1] Four months before his admission to the hospital he became short of breath. He then began to have shivering attacks in which he became very hot and then very cold. He did not think he had wasted, and on

[1] Case 31, table 2.

admission showed no signs of emaciation. His temperature reached 102° every night, usually falling to normal in the morning. He had never had any pain of any kind. A double aortic and mitral systolic murmurs were well heard, and the latter was conducted to the back.

This man was in no way depressed and showed no symptoms of the phenomena I have brought before you in these lectures.

His attention was but little impaired and although physically so ill he could read a book through without difficulty. But at the end he knew very little about what occurred at the beginning of the book and a very few days after he had finished it he did not even know what was in the last chapter. Although he could remember his childhood he had forgotten much that preceded the onset of his illness. He forgot what he saw in the street before he reached home. He was easily tired by any attempt at recollection.

This seems to have been a case where memory was lost owing to the diminished vitality of the nervous system produced by continued fever.

But when consciousness is dominated by images connected with the system of psychical dispositions that stand in relation to visceral reflected pain, memory will be weakened apart from the diminished freedom of attention so produced. For a system then becomes elevated into the central field of consciousness that has connections and dispositions widely different from those of the content of normal consciousness. Thus it will no longer be possible for a patient whose consciousness is dominated by a system of visceral origin to recall outlying images or dispositions that belong to his normal field. His memory will therefore be profoundly diminished, not because he thinks about his pain, but because this pain has changed the system that occupies the central field of consciousness.

Then again we must remember that states in which feeling-tone or emotion occupy consciousness are extremely poor in memory images. Most of us can recall the look of the spot where we have been profoundly miserable and have

a clear picture of all the surrounding circumstances, but few of us can reproduce the state of misery we experienced on that unhappy occasion. In the same way few can reproduce the sensation of a toothache although every object in the dentist's room can still be pictured as clearly as on the day the tooth was drawn.[1]

Thus not only is consciousness in these cases of visceral disease dominated by a system of presentations and predispositions which preclude the appearance of the usual content of memory, but this very system, consisting as it does mainly of states of feeling-tone, and emotion, is in itself for most of us but little capable of representation. Memory, therefore, is the poorer at the moment, and is not enriched by this state when it has passed away.

Thus memory tends to be irrevocably lost during the acute stage of the illness, because no images are laid down for future representation.

At the same time the memory of that period antecedent to the illness in which the images are not firmly fixed is also diminished, owing to the domination of consciousness by a system of presentations and predispositions other than that which usually occupies the central field. As soon as the attack ceases and the patient again returns temporarily or permanently to the normal, this loss will be recovered. The system that has dominated consciousness during the existence of the visceral pain will cease to occupy the field, and with the return of the normal content to the centre of the field comes back its attendant connections and predispositions.

[1] In the majority of the patients included in this research memory was essentially visual. This is also the case with most of my friends and with those patients of the richer and professional class with whom I have been brought in contact.

But I have come across three cases of that interesting form of memory so accurately described by Ribot "Recherches sur la Mémoire Affective," (*Revue Philosophique*, tom. xxxviii.), and called by him "true or concrete affective memory." In this form of memory feeling-tone, moods, or emotion are represented directly, without the intermediation of visual auditory or tactile representations as in most of ourselves. In addition those gifted with this memory are capable of calling up scents in the same direct way that most of us can call up a picture of some familiar place, scene, or person.

This is an uncommon form, and no such case is included amongst the patients on whom this research is based.

Chapter IV.—Conclusion.

We have now seen that the presence of pain of the reflected visceral type tends to be associated with a mental state, containing amongst other conditions, a sense of ill-being and a causeless suspicion.

In conclusion, let us attempt to discover, if possible, firstly, the way in which this association is brought about between pain and a peculiar mental state, and secondly, the causes that may have led to this association.

The lower we pass down the animal scale the more purely is the life of the individual determined by visceral impulses. On the other hand the aim of human development is to keep such impulses in the background in order that the mind may be ready to receive impressions of all kinds from an ever shifting environment. Under normal circumstances visceral life takes place outside consciousness. At the most, consciousness is stirred by some slight alteration in feeling-tone, so entirely unaccompanied by sensation within the field of consciousness that we remain ignorant of the place whence it comes, or the physical activities that give it birth. The visceral field is pushed out of consciousness, and its records remain only as latent dispositions.

But a complete change takes place when reflected pains of visceral origin come into existence. These sensations produced by abnormal activity of the viscera crowd into consciousness, usurping the central field of attention. Now when pain of somatic origin, as for instance that of an injured limb or a burn, enters consciousness, it occupies attention, but brings nothing in its train. We grow miserable with the pain of the injury, with the restlessness and inability to sleep, but our attention is occupied only by the desire to place the injured part in the least painful position. Our sleep may be troubled with dreams, but they are either dreams of pain such as that a cat is clawing the injured part, or worrying dreams about work and the affairs of the day. We do not wake frightened or in tears. We are not subject to sudden unaccountable attacks of low spirits. Nor are we suspicious of those around us. If consciousness is disturbed it will be by pain, and pain only.

On the other hand reflected pain of visceral origin brings in its train all those images and dispositions which exist normally at the fringe of or entirely outside the field of consciousness. All those sensations that are associated with visceral activity, which do not exist in consciousness under normal conditions, come to the surface. The patient's character appears to be altered, for the content of his consciousness is changed. He will become moody, at one time unduly exalted, at another depressed without cause. Reason is displaced and he is the victim of each passing wave of feeling-tone, and he will have lost control over the expression of his emotions and of his temper.

That barrier which the normal mind sets between conscious life and that of the viscera, the integrity of which depends on a high potential of vitality in the nervous system, has been broken down.

Now, in the life of a woman this barrier is less stoutly fixed than in that of a man, owing to the periodic occurrence of menstruation and its attendant mental manifestations. The resistance to be overcome in a woman is therefore less than that in a man. This accounts for the greater ease with which all visceral manifestations can be produced in women compared with men.

But in addition to a great susceptibility to visceral activity reflected pain brings in its train a series of anti-social mental states. The patient is impelled to separate himself from his fellows by an impulse to be alone, a sense of some unknown impending ill and suspicion of those around him. Everything urges him to get away by himself. He is permitted no choice of "staying and seeing it out," like those who are suffering from a true delusion of persecution, for reason plays no part in the matter, and if the psychosis once gains the upper hand he is delivered over to a blind impulse to shun his fellows.

But man is a gregarious animal, and civilised man is peculiarly characterised by his tenderness to those who are ill. Moreover, in the intervals when he is not dominated by these mental changes the patient recognises that far from those around him being against him they are, if anything

more solicitous of his welfare than before he was ill. His fellow-workmen or his master make his job easier for him; his friends help him with his home or children; his wife is more affectionate than before.

Thus the effect produced upon his actions by the mental state induced by his disease serves directly, in a civilised community, to make his lot harder than it would otherwise be.

How then is it possible to explain the origin of so pernicious an association as that between visceral pain and these anti-social impulses?

At the close of these lectures perhaps I may be permitted to indulge in fantastic speculation. The oldest system in the body is that to which the name autonomic has recently been given. Under this name we understand not only all that is known to the anatomist as the sympathetic system, but also all those parts in the central nervous system which stand in connection with the viscera. It still retains traces of a primitive segmentation lost elsewhere. The sensory supply of the heart is still arranged as if that organ were a tube with the ventricles situated headward to the auricles. The plan on which this nervous system is laid down is related to that of invertebrates more closely than to the cortical system of man. It is essentially the system of animal, as opposed to human activity.

Now, when an animal is wounded or ill, he is killed by his fellows without mercy. A wounded animal therefore crawls away either to recover or to die in his hiding place. But an instinct that is salutary for an animal or for the lowest savage is entirely opposed to the highest development of the human mind. It is therefore no longer associated with those parts over which the highest centres of man have the completest control, but still remains attached to sensations from the visceral system.

Hence, when the mental states that have occupied us in these lectures appear in consciousness they seem an intrusion from without, an inexplicable obsession that can neither be controlled nor subjected to logical analysis.

All such states have since the earliest times been classi-

fied under the name hysteria, and I shall be satisfied if in these lectures I have been successful in relating to their proper position a small band of symptoms included under that vast and heterogeneous group.

Appendix.—Cases Reported in Full as Examples of the Mental Changes Described Above.

Example 1. [Case 23, table 1.] *To illustrate the hallucinations that may appear with cardiac disease.*

Edward B., aged 42, has been under my care at the London Hospital from August, 1900, until the present time. On February 27, 1901, he was admitted under Dr. Percy Kidd, and discharged March 8.

The following account embodies the results of many examinations at different times during the last twelve months.

§ 1. *History.*—He has had two attacks of acute rheumatism, one at 16 and one at 21.

For fifteen years he has known that his heart was affected, but he dates his illness from 1898. Before this date he had suffered from pain occasionally; but since then pain and headache have been almost continuous.

He is a teetotaller and non-smoker, is married and has nine children living and healthy.

§ 2. *Physical condition.*—He is a well-built, intelligent man of 42, a carpenter by trade. He shows no signs of anæmia or cyanosis. He is spare, but there is no general wasting.

He complains of pain in the left side and down the left arm on the ulnar aspect. This pain is always accompanied by more or less superficial tenderness over an area, on the left half of the chest only, extending from the second space above to the level of the ensiform below and down the ulnar side of the left arm to the elbow. (Dorsal 2 to D. 7.) Occasionally there is also slight tenderness over the supraclavicular fossa and back of the neck on the left side. (Cervical 3 and 4.)

He also complains much of headache over the left side of the head, accompanied by scalp tenderness mainly over the forehead, but also extending back to the temporal and vertical regions. The right half of the head has always been entirely free from headache and scalp tenderness.

He is short of breath on exertion, but is able to do light carpentering unless the pain becomes troublesome. He then rests and can return to work in a few days.

The pulse is usually about 74, with a small stroke and collapsing character.

The apex beat is situated in the sixth space, $4\frac{3}{4}$ inch from the middle of the sternum (1 inch external to the nipple line). Cardiac dulness begins above at the third space, extends 5 inches to the left of the middle line and to the right edge of the sternum. A typical double aortic murmur can be heard over the base of the heart, the systolic conducted into the neck, the diastolic down the sternum. At the apex a systolic murmur is heard conducted to the midaxilla only. The first sound at the apex is short and very sharp, is loudly heard in the axilla and at the angle of the scapula. The second sound is usually absent from the apex.

The lungs are unaffected.

The liver is not enlarged and there has never been fluid in the abdomen.

The tongue is clean, bowels regular, and he never suffered from nausea or vomiting.

The knee-jerks are normal and there are no abnormal signs in the nervous system.

The urine contains no albumen or sugar.

§ 3. He is very intelligent and gives an extremely good account of his symptoms.

He frequently wakes at night to see a figure standing at the bottom of his bed on the left side. This figure is either white or grey. He can see the face but cannot accurately discern its features. It resembles a face and figure seen through a gauze. It is never "dressed like ordinary people but seems to be draped in some pale thing." This figure always seems to be looking at him. It lasts for many minutes and disappears without moving away. It seems to stoop down and to become hidden at the foot of the bed. Many a time he has got out of bed to look for it or has waked his wife and asked her to look at the figure standing at the bottom of the bed. When it first began to appear he used to be very frightened, his heart beat rapidly, he shivered and sweated. He can lie and look at the figure without being frightened of it, but he still shivers and sweats every time it appears. He says, "I don't seem to be afraid in my mind any longer, but I am still just as if I was afraid."

On August 19, 1900, I saw him on the morning following an

hallucination of vision of this kind; at that time he was having hallucinations almost every night. He was lying awake with a very bad headache "at the back of the eyes," when the figure appeared to the left-hand side of the foot of his bed.

When I saw him next morning the left half of the scalp was tender over the left half of the nose, the forehead, temples and vertex. The right side of the head was free from pain or scalp tenderness.

On the body the tenderness occupied the cervical 3 and 4, dorsal 2, 3, 4, 5, 6, 7 and 8 areas, on the left side only.

Vision was $\frac{6}{6}$ in both eyes, there was no error of refraction. No changes were present in the fundus oculi except that the vessels are seen to pulsate (aortic disease).

When in the hospital in March 1901, under Dr. Kidd's care, he twice had a typical hallucination of vision, and exactly similar scalp tenderness was observed and noted by Dr. Salaman.

§ 4. He constantly wakes at night to hear a loud ticking in the wall to the left of his bed. It lasts for several minutes after he wakes. At first it frightened him, and he would get out of bed and tap the wall to see if he could stop it. His wife has never been able to hear this sound; sometimes he will hear it every night, sometimes it will go away for a month or more.

He had no auditory hallucinations when in hospital in March 1901, under Dr. Kidd.

His hearing is good, and the ears are absolutely normal.

§ 5. He has never had any hallucinations of smell or taste.

§ 6. Whenever his pain is troublesome he becomes liable to attacks of low spirits, and I have seen him in these attacks on several occasions. They come on quite suddenly, and he has an intense desire to cry. He goes away by himself and "has it out." He does not want to be spoken to, and if his wife, or anyone in the ward, spoke kindly to him when in this condition, the tears would come into his eyes. He had a feeling as if some unknown ill was about to befall him, and on one occasion I found he had written his name and address on a piece of paper and pinned it inside his coat, before coming up to the hospital. When in bed in the hospital he had several attacks in which he hid his head under the bed clothes and cried.

Music is very disagreeable to him when he is in this state. He says that when at home, if the piano is played next door, it causes him to be downhearted and he lies in bed and weeps.

He has a strong visual memory, and as one of the attacks was clearing away he made the following observation (June 17, 1901): "When I try to think of my home, the room looks all dark. I can't picture the cloth on the table, and yet I know there is a light one with a picture of the Transvaal War. There are bright mottoes all round the room, and the room, I know, is an uncommonly bright one, for my wife loves bright things. But somehow, I don't seem able to picture the room as I know it is, but all dark and miserable looking."

§ 7. He frequently has a feeling as if he was very strong. "Sometimes I feel as if I were 80, sometimes as if I were 18." He then wants to lift something, he grips his plane and starts, a heavy piece of work. But the exertion brings on palpitation and pain, and he is obliged to sit down.

The depression and exaltation alternate, but he is very definite in his statement that the exaltation comes on when the pain goes away, and that, with him, it follows the depression in most cases.

§ 8. His memory has become bad lately, particularly for things that have happened recently. This has become particularly obvious in his work. He works for a railway and has jobs belonging to many different stations and shops on the line. When the work is finished he cannot now remember for which place it is intended. Up till eighteen months ago he never had any difficulty in remembering his work.

He forgets what he reads, what he sees in a theatre, and even the titles of songs he has heard at a concert.

Remote memory remains excellent.

§ 9. He now finds great difficulty in "thinking a thing out." He cannot "take out the quantities" of material required for a job in his head as he used to do.

He can no longer keep his attention on a book or a paper as he used to be able to do; for he was a great reader and for years he had books from the free library. But for the last six months he has not taken out a single book.

§ 10. He constantly has a feeling that his fellow workmen are against him, and when in hospital felt sure the nurses thought he was not ill enough to be looked after.

When this feeling first started he told the people in the workshop that they thought him lazy. He was perfectly satisfied when they said it was nonsense. Now he knows these feelings are "all fancy," and has been able to control himself sufficiently never to charge anyone with being against him.

Example 2. [Case 15, table 1.] *To illustrate the mental changes that may accompany disease of the mitral valves.*

Alice T., aged 27, was admitted to the London Hospital, under my care, May 29, and discharged July 11, 1901. She is still under my care as an out-patient.

§ 1. *History.*—At the age of 12 she had suffered from chorea. For two or three years before admission the knees and shoulders had been swollen on several occasions, but she had never kept her bed. She had had many attacks of tonsilitis.

Up to the age of 21 she had worked as a shop assistant, but then had to cease work on account of cough and shortness of breath.

For two years before admission she had had pain in the left side on many occasions.

Her legs had begun to swell occasionally for some months before admission.

She had not menstruated for twelve months before admission. It had always been irregular, but painless.

§ 2. *Physical condition on admission.*—She was a light-haired, well-built, intelligent woman of 27. She had been a shop-assistant. There were no signs of anæmia, but there was a dark red flush on either cheek, and the red of her lips had a slight bluish tinge. She was not wasted.

She complained of pain in the chest, mainly between a line drawn round the body at the level of the nipples, and the umbilical line; greater on the left side than the right. This pain was accompanied by superficial tenderness over the fifth to the ninth dorsal areas, and also to a less extent over the third and fourth dorsal, and third and fourth cervical. This tenderness was well marked on the left side, but was patchy and of slight intensity on the right half of the chest.

She also complained of headache, mainly in the temples, but also on the vertex. This pain was accompanied by tenderness over the forehead, temples, and vertex on both sides, the left more marked than the right.

She was short of breath on the least exertion, and could not sleep unless she were propped up with several pillows.

The legs were not swollen.

The pulse was 76, regular, with a small stroke and maintained tension.

The apex beat was situated in the fifth space 4 inches from the middle of the sternum (half-inch external to the nipple line), and no thrill was felt. Cardiac dulness began above at the third

space, extended 4½ inches to the left of the middle line and to the right border of the sternum. A systolic murmur was heard at the apex, and was conducted to the right as far as the epigastrium. To the left this murmur was not heard further than the midaxilla. The first sound at the apex was short, but sharp and loud, exactly resembling the typical first sound in mitral stenosis. The first sound was well heard at the angle of the left scapula. At the apex the second sound was reduplicated, but over the pulmonary area was accentuated only. No other murmurs were heard.

She suffered from no cough, but many dry râles were present over the base of the left lung.

The liver was not enlarged, and there were no signs pointing to fluid in the abdomen.

The tongue was clean and moist; the bowels tended to be confined. There was no vomiting.

The knee-jerks were normal, and there were no signs of any disease of the nervous system.

The urine was acid, specific gravity 1020, contained a trace of albumen but no sugar.

§ 3. She is a quiet, intelligent woman, and always gives a remarkably sober account of her symptoms.

During the period preceding her admission to the hospital, when she was an out-patient under my care, she frequently complained of smelling horrible smells. Sometimes it was as if something was burning, sometimes it resembled "fish that had gone a little tainted." For instance, just before admission, whilst at dinner, she smelt a horrible rotten smell that turned her entirely from all food. No one else could smell it.

When in the hospital, on June 1, 1901, at 9 p.m., she suddenly smelt a tainted smell, as if something had gone bad—"like meat that had gone nasty." It made her feel sick, but she did not vomit. She was in bed at the time, and there was no food of any kind in her neighbourhood. She had not been asleep. She called the nurse, who was unable to smell anything. Then she knew it was one of her "fancies" to which she was well accustomed.

I had seen her half-an-hour before this occurrence and had made a complete physical examination. The physical signs were those given above. Her sense of smell was good, and no abnormality was seen in the nose. Taste was excellent, and the tongue was clean and moist.

The next morning (June 2) she told me of what had happened after I left her, and I again made a complete examination of the

nose, mouth, tongue, and of the condition of the chest. She was still suffering from temporal headache and marked superficial tenderness was present over the forehead, temples, and vertex on both sides.

On several subsequent occasions during her stay in hospital she experienced a similar "rotten" or "tainted" smell; but in every case, excepting in the instance detailed above, the hallucinations occurred during the daytime.

§ 4. On admission she complained that during the last two years, and especially just before admission, she had heard sounds that no one else could ever hear. Sometimes these sounds took the form of a loud knocking in the next room or in the street—"as if in the night somebody was doing a terrible lot of work either inside or outside the house." She has also heard bells ringing at night—"sometimes as if they were outside or at a distance, sometimes as if they were closer, in the room." Her mother could never hear these bells or the other sounds of which she has complained. The knocking sounds were always unpleasant and frightened her. The bells were sometimes pleasant, but sometimes worried her "on account of their horrible jangling."

On admission her hearing was excellent. A watch was heard at 18 inches from right and from left ears. The tuning fork on the forehead showed normal conduction. Examination of the ears revealed no wax and the membrane on both sides was normal and showed no cupping.

During her stay in hospital she had no hallucinations of hearing.

§ 5. During the two years preceding her admission to hospital she has occasionally woke at night to see a "darkish thing" come in at the door of her room. "It is a man, and yet it does not seem to be a man." "It seems too large for a man, and its face is all dark." "Its clothes don't seem as if they were made like ordinary clothes, but seem to have grown to it, and that is one reason why it does not seem like a man." It always frightens her and makes her "creep all over," and sweat profusely. Occasionally she had seen this figure in the corner of her room when she entered it at night. It made her stand still with fright.

On admission her vision was R. $\frac{6}{6}$ well, L. $\frac{6}{6}$ poorly, Jäger 1 R. and L. The fundi were normal, and there was no marked error of refraction.

She experienced no hallucination of vision during her stay in hospital.

§ 6. She complained of frequent attacks of low-spirits, and on July 7, 1901, I saw her in a typical attack which came on when she got up in the afternoon. She went out of the ward into the bathroom and cried. Why she cried she did not know, but she had a feeling as if something was going to happen. Whilst in this condition she thought about her home, and the only picture she could call up was "as if it was all muddled and upside down; things were not hanging straight, and all the furniture was in disorder." Next day she told me she had determined to discharge herself because she wanted to go home "to see if it was really like this."

She had several similar attacks during her stay in hospital, but they became less frequent towards the end of the time.

§ 7. She has frequently had a feeling as if she wants to get up, "rush about and do a lot of work." "I feel more than right—as if I had got extra strength." Thus, one day when in the garden of the hospital, she felt she could race up the steps to the ward, as if she had nothing the matter with her. She started to try but had to sit down.

This feeling generally came on after an attack of low spirits, or if she woke in the morning with little or no pain. Under such circumstances she wanted to help the nurse clean the ward and lift the beds about.

§ 8. Her memory had been failing for some little time before her admission to hospital. She could not remember where she had put things, what she had intended to do, or what she was told. She had had a strong visual memory, and even during her stay in hospital could picture fairly well; but she volunteered that this power, which was one of her greatest pleasures, had become much less in the few months preceding her admission.

In hospital she could not start any song by herself, whereas before she had had "a quick ear," and was fond of singing.

She was a great reader, and read several books through during her stay in hospital. Yet she could not remember the plot of the last book she read, or the name of the book standing beside her bed (July 9). She could not keep her attention on things as she used to do.

Memory for remote events up till about two years ago was good.

§ 9. Before admission to the hospital she had frequently had a feeling that people were talking about her when she knew it was not true. She had accused her mother, brother, and sister of being

against her and of wanting to get rid of her. On the afternoon of June 1 (when in hospital) she told the next patient that the nurses and sister were going to get her turned out of the hospital; that "they just give me some medicine to please me but think there is nothing really the matter"; "they all want to get rid of me." All the time she knew it was untrue and shortly afterwards told me that she had made these statements but was certain they were untrue. She said, "I feel I want to make a complaint, and it is very hard to keep it back although I know it is not true," and "for a time I am quite satisfied if they tell me it is nothing."

§ 10. She very much improved during her stay in hospital. The pain became less severe and the attacks of depression less frequent. She was much less short of breath and was able to be up all day and to work about the ward without discomfort. The physical signs remained unaltered.

Example 3. [Case 17, table 1.] *A case of disease of the mitral valves. To illustrate more particularly the hallucinations of hearing that may accompany visceral disease.*

Emily E., aged 36, a widow, was admitted to V.P.H., under the care of Dr. Sainsbury, on November 25, 1893, and discharged on January 9, 1894.

§ 1. *History.*—She had had an attack of rheumatic fever at the age of 13, and at the age of 27 another attack which left her with shortness of breath, palpitation and pain in the left side.

In 1886 she had suffered from slight "inflammation of the lungs," and in 1889 suddenly spat blood. She had been liable to blood spitting from that time until her admission to the hospital.

She had been liable to "quinsies" ever since she was a girl.

Menstruation began at 17, and usually ceased whenever her general condition became worse. Pain usually came on with the onset of the flow, particularly in the back and thighs.

She was married at 17, and had had two children who died apparently of tuberculosis. Her husband died of phthisis.

There was a strong history of phthisis on both sides of her family.

§ 2. *Physical condition.*—She was a medium-sized woman of 36, with a sallow face and slightly dusky complexion. Her lips

were a little pale. The ends of the fingers and toes were cyanosed, but the lips and ears were not blue. The ankles had been swollen but were not œdematous on admission. She was somewhat wasted, and said she had been getting thinner for two months.

She complained of pain in the left side below the heart under the angle of the left scapula. This pain was accompanied by marked superficial tenderness, over an area of the left half of the chest only, bounded roughly above by a line round the body at the level of the third rib, and below by a line at the level of the ensiform cartilage [dorsal 4, 5, 6 and 7.][1]

She also complains greatly of temporal and vertical headache on the left side. This was accompanied by scalp tenderness over the orbit, temple and vertex of the left side only.[1]

She was short of breath on exertion, and was a good deal troubled by cough. She could not lie flat in bed at night.

The pulse was 100, regular, and with a small stroke and maintained tension.

The apex beat was situated in the fifth space just internal to the nipple line. No thrill was felt. Cardiac dulness began above at the third space, extended to the left to a point just internal to the nipple line and to the middle of the sternum on the right. A systolic murmur was heard over the apex of the heart which was not conducted to the angle of the scapula. The first sound at the apex was short, sharp, and very loud. The pulmonary second sound was accentuated.

Respiration was hurried and both costal and diaphragmatic. There was no dulness over any part of the lungs. The breath sounds were universally feeble, vocal resonance poor, but no râles were audible anywhere.

The tongue was furred, with red edges. Appetite was poor. She did not vomit during her stay in the hospital. The bowels were confined.

The liver was not enlarged, and there were no signs of fluid in the abdomen.

The knee-jerks were normal, and there were no signs pointing to disease of the nervous system.

§ 3. She said that for the last two years she had suffered from sounds that no one else could hear, and had become quite

[1] I have given the actual distribution of the tenderness on the body and scalp that accompanied the hallucination of hearing on December 4. During her stay in hospital the tenderness was sometimes more, sometimes less extensive, but always tended to lie over the area from D4 to D7, on the left side and over the temple and vertex on the left half of the scalp.

used to hearing things that were not there. Thus, although she lived at the top of the house she frequently heard tapping at the window of her room.

On December 4, she heard a tapping on the wall close to her bed in the ward. She was startled and "upset," but not actually frightened. This lasted half an hour, and I was able to assure myself that there was no external cause for this sound. She was then suffering from headache mainly over the top of the head on the left side, accompanied by the tenderness described above in § 2. Her hearing was good, and examination revealed no abnormality in her ears.

This was the only hallucination of hearing during her stay in hospital.

§ 4. Before she came into the hospital she had occasionally smelt foul smells no one else could smell. During her stay she several times smelt rancid oil burning in the ward, which the other patients could not smell. On the morning of December 8 the cocoa seemed smoky and burnt; no one else could smell it. She was suffering from her usual temporal and vertical headache.

§ 5. Before admission she had seen a white figure in "long loose robes" standing by her bed. It seemed to be about a yard from the bed, and was very pale. It always seemed to advance towards the left side of her bed, and once she had put out her hand to push it away. She had no visual hallucination during her stay in hospital.

§ 6. For more than a year before she came into the hospital she had been subject to attacks of causeless depression. She felt she was going to hear bad news, wanted to go away and cry, and could speak to nobody. She had at least one attack during her stay in hospital.

§ 7. Her memory had been bad for three years. She would forget what she had seen, where she had been, what she went out for, and where she had put things.

Her memory for the remote past was poor, but for recent events was exceedingly bad.

§ 8. She was fond of reading, but could not keep her attention on a book, and forgot what she read.

§ 9. She had no feeling that people were against her whilst she was in hospital.

§ 10. She became on the whole freer from pain as long as she was kept in bed, but the pain returned when she got up. The physical signs remained unaltered, and she left the hospital slightly better than when she came in.

Example 4. [Case 12, table 1.] *A case of aortic aneurism to illustrate the alteration in mental state that may be associate with the development of visceral pain and the return to normal tha may accompany the disappearance of such pain.*

Jane R., aged 53, widow. Admitted to Marylebone Infirmary, November 17, 1895, and last seen by me April 15, 1896 (Mr. Lunn).

§ 1. *History of present illness.*—In October, 1894, she noticed a pain in the interscapular region, which seemed to settle at one place in her back. On January 24, 1895, she went to the Brompton Hospital and was immediately admitted. Thence she was transferred to the Middlesex Hospital, and from there to the Infirmary. She had been in bed during most of the time she was in hospital, and on admission to the Infirmary the pain was much less severe than it had been. But if, when allowed up, she walked fast her breath became short.

She had never been pregnant. Menstruation ceased twelve years before admission. She had never had any illness excepting "low fever," and had been very temperate.

§ 2. *State on admission.*—She was a well-built, bright, cheerful woman of 53. No signs of anæmia. No œdema of face, legs, or back. She showed no obvious wasting.

She was entirely free from pain and there was no marked superficial tenderness. She was not short of breath when in bed.

The heart's apex beat was difficult to localise. Cardiac dulness began above at the third space, extended to the left nipple line (3¼ inches from mid-sternum) and, on the right, to the middle of the sternum. Over the upper part of the sternum and the second right intercostal space a soft blowing systolic murmur was heard abolishing the first sound. Over this area the second sound was accentuated. Elsewhere the sounds of the heart were well heard and there was no murmur.

Very slight pulsation was visible above the manubrium sterni, and if the hand was firmly applied over the second right costal cartilage a distinct thud could be felt with each heart beat. No tracheal tugging was present.

The pulse was 68, with a rather small stroke and no regurgitant characteristics. The two pulses at the wrist were equal in time and force. Capillary pulsation was absent.

The left vocal cord did not move well on respiration.

Beyond slight signs of emphysema the lungs were normal.

The tongue was red and moist, heavily lined and furrowed. Appetite was poor. No vomiting. The bowels were confined and could only be opened with aperients. The urine was normal.

The left pupil did not dilate to shade but there was no enophthalmos or drooping of the left eyelid. With this exception there were no abnormal signs in the nervous system.

§ 3. She remained free from pain, bright and cheerful until about January 7. She then began to complain of pain in the left side and headache across the forehead. This culminated in a sudden attack on the afternoon of January 12, during which she screamed with pain. It was situated mainly over the epigastrium and back, but there was widespread tenderness over the areas from the second dorsal to the ninth dorsal, more marked on the left side but present also on the right. The headache was mainly frontal and temporal, and was accompanied by marked tenderness over the whole forehead and over the temples on both sides.

Except that perhaps the pulsation was somewhat more marked over the second right intercostal space, the physical signs remained unaltered.

Mentally, however, she had changed completely. She was sleeping poorly and had been troubled by horrible dreams. On January 11, in the middle of the night she woke and saw a black figure come into the ward. It was so tall that it could only just get in at the door. The face was black. It came forwards towards her bed from the left. She was much frightened. She had never before experienced an hallucination of vision.

On both January 12 and 13 she had an attack of acute depression in which she cried, wanted to be by herself, and had a feeling that something was going to happen.

On January 14 she said "this week I have begun to think that the people in the ward are talking about me, and saying I ought to get up and go about, for I am not really ill. But I believe it is all my fancy."

§ 4. On February 7 she was beginning to improve, and by the beginning of March was free from pain and headache and superficial tenderness was almost completely gone.

Her mental state again changed. She slept better and had no hallucinations. Her last attack of causeless depression occurred during the third week in February. The suspicion had entirely ceased, and she had become the sober cheery woman she was on her first admission.

Example 5. [Case 72, table 3.] *To show the mental changes that may be associated with progression of pulmonary tuberculosis towards a fatal issue.*

Bernard McD., aged 21, single, was admitted to V.P.H., under Dr. Harris, July 9, discharged October 10, 1894.

§ 1. *History.*—Whilst serving in the Marine Artillery he broke his ankle and was invalided home in May, 1892. For five months he nursed a friend who was dying of "consumption of the throat."

After the death of his friend he felt languid, became liable to "colds" and had an attack of "influenza."

But in August, 1893, he enlisted in the Cape Mounted Rifles. On the voyage out he again "caught cold" and lost 7lbs. He became steadily worse and in May, 1894, was invalided home with phthisis.

He denied syphilis and gonorrhœa.

There was a strong family history of phthisis. One of his brothers and one sister are affected, and one of his paternal uncles died of consumption.

§ 2. *On admission* he was a well-built man of 5ft. 10in., but wasted and cachectic. He had lost three stone in eighteen months.

The temperature was irregular, reaching 101° at night.

There was considerable dyspnœa. The cough was paroxysmal and the expectoration not infrequently tinged with blood.

He complained of pain, mainly over the neck and upper part of the chest on both sides. This was accompanied by much superficial tenderness.

Over the upper lobe on the right side, both in front and behind, the percussion note was diminished, the vocal resonance increased and the breath sounds weak but bronchial. Over this area râles were heard which behind involved the upper part of the lower lobe. The remainder of the chest was unaffected.

The circulatory system was normal and pulse 84.

The tongue was clean and red at the tip and the appetite was fairly good.

Neither nausea nor vomiting were present, and the bowels were regular.

§ 3. *Progress.*—By August 3, the disease had rapidly progressed down the right side so that the base of the lung was affected. By the end of August not only was the whole left side affected, from apex to base, but over the right apex the note was

dull, the breathing was bronchial, vocal resonance increased and râles were audible. By the middle of September the disease had extended into the upper part of the lower lobe on the right side, and at the end of September râles were heard around the angle of the right scapula. On discharge (October 10) the right base had become permanently affected. He died three weeks after discharge.

Throughout the whole time his temperature was irregular, frequently reaching 102° at night, but always falling to normal in the morning.

He lost weight steadily for the first seven weeks, then gained slightly, finally losing again.

His pain and the extent of the superficial tenderness greatly increased, and came to lie more definitely over the sixth, seventh, eighth and ninth dorsal areas, first on the left and then on both sides. The maximum incidence of the headache and scalp tenderness, which at first lay over the forehead, shifted back to the temples and finally to the temples and vertex.

His tongue remained clean and red throughout but appetite varied greatly. He became subject to attacks of diarrhœa in which the stools were offensive. He had frequent attacks of nausea but little vomiting.

§ 4. Up till August 12, he was bright and cheerful; but after this date he became subject to frequent attacks of causeless depression. He had had similar attacks before admission during the earlier part of his illness, but he had been free of them for three months before admission. I watched him through several of these attacks, which frequently came on quite suddenly. He would go away to an obscure corner of the corridor, or would cover his head with the sheet and cry in bed. Before admission he went out into the fields to cry. He felt as if something was going to happen to him but did not know what it could be.

He had a strong visual memory and said that when he became low spirited he saw his home "topsy-turvy, the chairs were upside down and tossed about as if there had been a row."

§ 5. On September 23 and 26 (and on other occasions when I was not present) he had a feeling of exaltation. He had been in his ordinary condition all the afternoon, and had had pain in the head, neck and shoulders. This left him at 5 p.m., and he suddenly felt very strong. He began making his bed and felt as if he could lift the whole bed from the ground. He boxed with another patient but soon saw how weak he was.

§ 6. Up to three months before his admission to hospital, he

woke on several occasions to see a white figure at the foot of his bed. The face seemed covered and the figure seemed that of a person wrapped in a sheet. He could not tell whether it was a man or a woman. He was "ridiculously frightened" and sat up in bed shivering, sweating, and with "goose-flesh." He had no hallucinations of vision during his stay in hospital. His vision was $\frac{6}{6}$ in both eyes, and there was no error of refraction or abnormality in the media or fundus oculi.

§ 7. For five months before admission he had smelt curious smells that others could not smell.

On August 16, and on five other occasions during his stay in hospital, he had a definite hallucination of smell. The smell was said to resemble "bad fish," or a "drain smell" like the opening of a sewer. On several occasions it was a "fusty burnt smell." On one occasion he thought he himself stank, but neither the nurse nor the other patients to whom he applied could smell it. These smells made him feel sick and they always "seem to make the head ache very badly." On August 16 he was complaining of much temporal headache and superficial tenderness was present markedly over both temples, and to a less extent over the eyes and over the vertex. Smell was qualitatively good and the nose normal. Taste was excellent to acid, sugar, quinine and salt. The mouth was clean.

§ 8. He experienced no auditory hallucinations at any time.

§ 9. His memory began to fail four months before admission and became much worse during his stay in hospital. He used to have a particularly strong memory for names and places, and was picked out for scouting on account of this aptitude. All this power left him. He could not remember errands or orders, nor where he had put things.

He could not keep his attention on a book or a game and forgot what he read.

His memory for the remote past was unaffected.

§ 10. His temper had become very irritable within the few months preceding his admission. He would snap at the children at home and then take them on his knee, kiss them and make up to them because he felt so upset at having snapped at them. He would lose his temper with a patient and immediately go up and say how sorry he was.

§ 11. He frequently thought people were against him and when he saw two nurses talking together thought they were saying he had misbehaved himself in the ward or that he was lazy and should be got rid of. On September 25, he complained to

the sister of the conduct of the nurse, but was satisfied when she told him he was wrong. He informed me that he had made this charge and said he was sure it was untrue; but "although I struggled against it, it came out in spite of me and I was very glad sister took no notice of it." He had been much troubled about these false charges he seemed compelled to make and became much happier when it was explained to him that they were a symptom of his illness.

Example 6. [Case 68, table 3.] *To illustrate the occurrence of an hallucination of vision during the course of pulmonary tuberculosis.*

James D., aged 29, single, was admitted to V.P.H., under Dr. Eustace Smith, on February 19, and discharged March 31, 1894.

§ 1. *History.* One morning in July, 1893, he coughed and fetched up a mouthful of blood. He continued to bleed somewhat profusely for three days, and was then admitted to Guy's Hospital, where he remained for a month.

When he returned to work he was troubled by shortness of breath on the least exertion and much cough.

He had lost flesh, and occasionally sweated at night since July, 1893.

He had had no diarrhœa or vomiting.

He was a painter. He denied venereal disease, and there was nothing of importance in his past history.

His family history was free from tuberculosis, insanity, or neuroses.

§ 2. On admission he was a well-built man of 29, but looking considerably younger. He was not emaciated, but stated that he had lost weight. Anæmia and cyanosis were absent, and the fingers were not clubbed.

The temperature rose each night to between 99·4° F. and 100° F.

He was not short of breath when in bed, but became so on walking, more particularly if he attempted to go upstairs. His cough was very slight except in the morning. The expectoration was small in quantity, but contained large numbers of tubercle bacilli and some elastic fibres.

He has had pain over both supraclavicular fossæ, and in the left side over the seventh space in front and the eleventh space behind. On admission there was slight tenderness over both

supraclavicular fossæ (cervical 4), and over what appeared to be the eighth dorsal in front and behind on the left side only.

He complained of headache "across the forehead," and there was some superficial tenderness in both supraorbital regions and over the vertex on the left side.

Over the right apex, both in front and behind, the percussion note was dull, the breath sounds feeble, expiration prolonged, vocal resonance increased, and râles were plentifully heard. Over the right base the note was dull, the breath sounds scarcely audible, vocal resonance good, and some superficial, irregular, crackling sounds were heard, probably due to previous pleurisy. Over the left apex the note was diminished in resonance, the breath sounds were bronchial, and vocal resonance increased, but no râles were heard. Below the angle of the left scapula some fresh râles were heard.

The circulatory system was normal, and the pulse 88.

The tongue was clean and moist, appetite good, and bowels opened daily. Neither nausea or vomiting were present.

§ 3. *Progress.* He improved somewhat, and by March 10 had lost all his pain and headache.

From March 18 onwards he lost weight, and his cough became more troublesome. By March 28 the whole right lung had become affected, and râles were audible from top to bottom. The left base was then clear. With this outburst in the right lung came on pain in the right side, accompanied by tenderness over the eighth dorsal area. The temperature oscillated between 100° F. and 101° F. and no longer reached normal in the morning.

He left the hospital with pain in the right side, vertical headache, and the right lung affected from top to bottom.

§ 4. Ever since the second week of his stay in Guy's Hospital (August, 1893), and more particularly for a few weeks preceding his admission to Victoria Park Hospital, he had occasionally thought he saw someone standing at the bottom of his bed. This figure had appeared on several occasions, and was always black. Even the face was black, and "it was not dressed in ordinary clothes, but like statues are dressed."

On the night of February 24, whilst in the hospital, he awoke to see the black figure standing at the bottom of his bed in the ward. It seemed to be "wrapped in a large cloak," was all black, and the face seemed to be covered. He was much frightened, sweated, and "came all over cold shivers." It very much upset him, and he lay awake till daylight with a bad headache over the eyes.

When I saw him next morning there was marked tenderness over the forehead in both supraorbital regions and over the left vertex.

Vision was $\frac{6}{6}$ R. and L. Jäger 1 at 5 and 14 inches. Both fundi were normal, but there was O. 5_D of hypermetropia.

This was the only hallucination of vision during his stay in hospital.

§ 5. Since he had been ill he had frequently thought he heard people walking about the house at night, and occasionally knocking at the door. This had occurred more often than once a week, and the last time was in the night before admission. These sounds are extremely unpleasant, and seem to "unnerve" him.

Watch heard at 3 feet right ear, 9 inches left ear. Fork on forehead heard best in the left ear. On examination the left meatus was found to be narrow and partly occluded by wax. On removal of this wax the membrane was seen to be healthy and not cupped. The right ear was normal.

He had no auditory hallucinations during his stay in hospital.

§ 6. At no time did he experience an hallucination of smell either before or during his stay in hospital.

Smell was good in the left, but poor in the right nostril. The septum was deviated towards the right, and he breathed with difficulty through the right nostril.

§ 7. Since his illness began he had suffered from occasional attacks of depression in which he wanted to be alone, and thought something was going to happen, but he did not know what it was or to whom it would happen.

From the first week after admission until March 25, when the right base was again attacked (*vide* § 3), he was cheerful. But he then began to suffer from marked attacks of depression. On March 28 he walked about from one place to another seeking some place where he could be alone. If spoken to he rose and went away to another part of the corridor. He had a feeling something must be happening at home, and was worried "because the home does not look the same as when I came away, but all dull and dark, and all the things seem to have been shifted."

§ 8. His memory had become very bad since his illness. He forgot where he had put his tools, and could not remember what he intended to do. He forgot what he saw in the street and had been told, especially what he had been told to do.

His remote memory was fair, and the main loss lay in memory of things tha had happened during the last year.

§ 9. His temper had become very bad. He would strike the children, and then be extremely upset and sorry that he had done so.

§ 10. His attention had failed since his illness, more particularly during the few months preceding his admission. He could not keep his mind on his work, and although he used to be extremely fond of dominoes, he could not play a good game in hospital.

§ 11. During his stay in hospital with the affection of the right base, at the end of March (*vide* § 3) he began to suffer from a feeling that people were against him. His people "did not want him home." When he saw two patients talking together he thought they were saying he was not really so ill as he said he was—that he "ought to be got rid of."

Example 7. [Case 63, table 3.] *A case of pulmonary tuberculosis. To illustrate the mental changes that may accompany the rapid involvement of the base of one lung in the course of the disease.*

George R., aged 39. Admitted to V.P.H., October 16, discharged December 21, 1893 (Dr. Sainsbury).

§ 1. *History.*—Two years before admission had an acute attack ("influenza") with cough and expectoration. He stopped in bed two weeks and recovered.

Fifteen months before admission pain came on in the left side which was increased with each deep breath or cough. He lost weight and felt weak and ill.

Nine months before admission he had another attack of "influenza," with headache and pain in the left shoulder. In this attack he sweated at night and lost much flesh.

Six months before admission he began to spit blood and had been continuously ill with cough and wasting ever since.

Except that nine years ago he had "typhoid" fever with "affection of the lungs," there was nothing of importance in his past history.

§ 2. *State on admission.*—He was a large well-built man, showing distinct signs of wasting. He said he had lost 14 lbs. in the last six months. Lips and conjunctivæ were of a good colour and there was no cyanosis.

He was short of breath even when lying in bed, the cough was hard and barking, and he was bringing up a considerable quantity of expectoration tinged with blood.

He suffered from very little pain, and superficial tenderness was absent, excepting for a spot in the left supra-clavicular fossa and the maxima of D. 7.

Movement of the left apex was less marked than that of the right. Vocal fremitus was increased over the upper part of the left lung in front and behind. The percussion note was, as a whole, hyper-resonant, but was diminished over the left apex in front and as far as the level of the sixth spine behind.

Over the left apex in front and nearly to the angle of the scapula behind expiration was prolonged, vocal resonance increased and small râles were plentifully heard. Over the right apex behind, expiration was also prolonged, vocal resonance somewhat increased and a few small râles were heard.

The pulse was 80, and there were no abnormal signs in the circulatory system.

The tongue was moist and a little flabby. Appetite was good and the bowels were opened daily. No nausea or vomiting.

He was bright and intelligent, observant, obedient and easy to manage. He slept well and had had no hallucinations of vision, hearing or smell. His memory had become worse during the last nine months.

§ 3. *Progress.*—The cough steadily improved and he gained 8 lbs. in weight.

But on November 18, the cough returned and fresh catarrhal signs appeared at the left base. The pain in the left side now became very troublesome, and was accompanied by marked superficial tenderness over the cervical areas, and the third, fourth, fifth, sixth and seventh dorsal on the left side. There was also some tenderness over the cervical areas on the right side. He complained of headache over the forehead and temples and there was marked tenderness over the forehead and temple on the left side, and some tenderness over the forehead on the right side. His tongue remained clean but he suffered from nausea. He did not vomit and there was no diarrhœa.

§ 4. He began to suffer from attacks of unaccountable depression. Suddenly he would feel very miserable and did not want to see or speak to anyone. He would leave the day-room where the other patients were amusing themselves, and go to the deserted library at the other end of the corridor. During these fits of depression he was haunted by a picture of his home "all topsy-turvy as if someone had been pulling the place about." In this memory picture it seemed as if it was a dull dismal day. There was no light in the room, no fire in the grate. The bright

table-cloth had gone from the table, and the antimacassars seemed to have lost their colour. On visiting day he asked his wife why she had made these alterations in the place and where she had put the antimacassars. He had a feeling he wanted to get home to put things right again.

The depression would pass off as quickly as it came, and he would wonder at the foolish things he had been thinking.

§ 5. On November 29, December 1, and December 3, he suddenly smelt an "earthy smell." He thought it was on his hands or about him somewhere, and he asked the other patients to smell his hands. On each occasion he refused his food, retched, and lost all appetite. On December 3, I was able to assure myself that there was no objective cause for this smell. His nose and mouth were normal, and the sense of smell was good. He was suffering much from headache, worse on the left side than the right, accompanied by superficial tenderness over the forehead, temples and vertex on both sides. Tenderness on the body involved the cervical areas from the third to the eighth dorsal on the left side. The temperature was 99·6°.

The signs in the chest had rapidly extended towards the left base. The bowels were opened daily, and there was no diarrhœa.

§ 6. From this time he rapidly improved, and by December 20, all pain and tenderness were gone both from the body and head. Again he gained weight rapidly, and his temperature remained below 99°. There was now dulness at the left base, with feeble breath sounds and diminished vocal resonance. Over this area small râles were heard. There were no other fresh signs in the chest.

With this disappearance of pain and quiescence of the disease after involvement of the left base his mental state again became that on admission. He was bright and cheerful, slept well and had no unpleasant dreams. No hallucinations had made their appearance since the first week in December. His memory began to improve during the last two weeks of his stay in hospital.

Example 8. [Case 83, table 3.] *A case of pulmonary tuberculosis. To illustrate the mental changes that may accompany the onset of gastro-intestinal complications in this disease.*

Frederick Thos. S., aged 28. Admitted to V.P.H. on October 12, and discharged November 25, 1893 (Dr. Clifford Beale).

§ 1. *History of present illness.*—In the early part of 1892 he

began to suffer from slight cough and "rheumatic" pains in both shoulders; about two weeks afterwards pain suddenly developed in the left side. He was admitted to St. Bartholomew's Hospital with cough and loss of weight. There he much improved.

In March, 1892, he again fell ill, and has been ill on and off ever since.

In November, 1892, he coughed up a mouthful of blood. He had lost 1 stone 7 lbs. in eighteen months.

§ 2. *Condition on admission.*—He was a medium-sized man of 28, but looked older. There was no anæmia, but he was somewhat cachectic. Slight signs of wasting were present. The fingers were slightly clubbed.

His respiration was twenty-five to the minute and the accessory muscles of the neck were working. He suffered from shortness of breath when he lay in bed. Cough was troublesome at night. Expectoration consisted of muco-purulent lumps with much aerated mucus.

The movement of the right side of the chest was greater than that of the left. The percussion note was diminished in resonance over the left side, and behind this diminution extended as low as the angle of the scapula. At the left apex in front the breathing was cavernous and there was whispered pectoriloquy. Behind the breath sounds were bronchial, and there was bronchophony to the mid-scapular region. Râles were heard over the left side as low as the angle of the scapula.

At the right apex behind the percussion note was diminished. The breath sounds were weak and whispered bronchophony and râles were audible to the level of about the third spine.

There were no circulatory symptoms. The pulse was 96 and the heart normal.

The tongue was clean and appetite fairly good. The bowels were open about three times a day. The motions were loose and brownish yellow in colour. The urine was normal.

§ 3. On admission he complained of no pain or headache and showed no tenderness. But on October 23 he began to complain of pain over the left side of the abdomen which increased in extent and severity. The motions became fluid, light yellow and very offensive. At the same time a fresh outburst of râles appeared at the left base.

He became miserable and depressed, sitting all day with his head on his hands, with a feeling that something was about to happen to him. He disliked to be spoken to, and when up sought

the most lonely part of the corridor. Before he entered the hospital he had been subject to these attacks of depression, and on one occasion felt an impulse to throw himself under a train. But this passed off and until the attack of diarrhœa came on again he had been bright and cheerful.

§ 4. Before admission he occasionally woke at night to see a face at the bottom of the bed looking at him "as clearly as if it was looking through a window." It was unlike any face he had ever seen before.

§ 5. Just before admission he several times smelt a nasty smell of "burning rags." Both at night and in the day he frequently got out of bed to see if anything was burning. This never occurred until two weeks before admission.

On October 27 he suddenly smelt a smell of burnt rags. There was nothing in the ward that could account for this. His sense of smell was good to all tests. His nose was normal, tongue a little furred and breath not offensive. His temperature was 100·6° F.

§ 6. His memory had become bad lately, and he could not keep his attention fixed on anything.

His temper was very short, and from October 23 he became difficult to manage in the ward.

When he left the hospital on November 25 the signs in the lungs had extended on the left side down to the base and he had lost 5 lbs. in weight. The temperature throughout rose at night to 100° F. or 101° F., falling in the morning to normal.

Example 9. [Case 155.] *A case of pulmonary tuberculosis which subsequently healed. To illustrate the depressed mood and suspicion that may accompany visceral reflected pain.*

Jessie A., aged 23, single. Admitted to V.P.H., September 22, discharged December 14, 1893 (Dr. Beale).

§ 1. *History of present illness.*—She was well until twelve months before admission when she began to feel weak and to have pain about the shoulders. In August, 1892, a cough began which became more troublesome and two or three months before admission the expectoration became blood-stained. She had lost weight and had sweated at night for about two months. Her menstruation had become irregular. She had had no previous illness and her family history contained nothing of importance.

§ 2. *Condition on admission.*—She was a tall girl of 23, pale but not markedly anæmic. Her temperature was 102°. Cough

was troublesome at night but much less frequent during the day. The sputum contained tubercle bacilli in small numbers.

At the left apex the percussion note was diminished in resonance. Expiration was prolonged, vocal resonance increased and a few crepitant râles were heard. Behind, a few râles were heard at the left apex after coughing. She was bright, cheerful and very intelligent.

§ 3. *Progress.*—The temperature came down gradually and she much improved. But eighteen days after admission (October 10) it rose again and remained permanently over 100°. She developed pain in the right side on breathing deeply.

The right base became dull and over this dull area the breath sounds were diminished. Vocal resonance was absent and distinct friction was audible about its upper border; showing that in all probability she had developed a pleurisy with effusion.

By the beginning of November all pain had gone from the right side and the signs at the right base were stationary. But she had now begun to develop pain in the left side of the reflected visceral type with some left-sided headache. The temperature was irregular rising occasionally to over 100° at night and not always touching normal in the morning. She was putting on weight rapidly.

§ 4. From this time until the time she left the hospital she was depressed, and on December 4, I saw her in a very typical attack. She had been up and about making herself useful in the wards. But on the morning of December 4, she got up feeling tired with headache over both temples, and over the top of the head. She also had pain at the left side and at the pit of the stomach accompanied by marked tenderness. At 9.30 a.m., after she had helped to take the lunch round to the other patients a "dreadful feeling" suddenly came over her as she was sitting talking in the day room. It was a feeling "as if there was something in store for me; just the sort of feeling that went before a punishment when I was a child." She at once left the room and had hardly reached an unfrequented corner of the corridor before she burst into tears. She cried and sobbed and would speak to no one. Whenever she was spoken to she walked away to some other place. She says the feeling was one of extreme dread without anything to be afraid of and she placed her hand over the epigastrium saying that that was where she seemed to feel her fear. She had no idea what it was all about, but she told a fellow patient she was certain she must be going to receive bad news.

This depression lasted until 5.30 p.m., and passed off as rapidly as it came; but it recurred at night and again the next day.

Under ordinary circumstances when she thought of her home she pictured the sitting room bright, clean, orderly, with a bright paper on the wall, lighted by sunshine and "cheerful and nice to go to." But during these fits of depression she seemed to see her room dark as if in a fog. All the chairs were out of place and things were topsy-turvy. The whole room was filthy, and there was no one about. By the window, the box-seat with its bright scarlet cover appeared all muddy and dark. She pictured her room at the factory "all upside down and not tidy and in order as I always leave it." These two pictures haunted her throughout her depression.

§ 5. She had no hallucinations of sight or hearing in hospital, but on one occasion had what appeared to be an hallucination of smell.

§ 6. Her memory became very bad. She forgot what she was told to do, where she had put things, what she went for, and whether she had had her medicine. She forgot what she saw, and the names or tunes of the songs at a recent hospital concert.

§ 7. She had made several friends in the hospital, but suddenly turned against two of them and accused them of speaking ill of her. She imagined they thought her lazy and that they wanted to get rid of her. She was, however, satisfied with a simple denial on their part that it was so.

§ 8. *Subsequent progress.*—I watched her for six months after her discharge from the hospital. The signs in the chest became quiescent, but she became anæmic, developed a hæmic murmur over the left base of the heart, and the hæmoglobin at one time fell to 60 per cent. of the normal. During this time the pain and tenderness spread widely, and she suffered from marked gastric symptoms.

In September, 1894, all signs of disease had gone from the chest except slight dulness at the right base. Her temperature was normal. She was no longer anæmic. All pain and tenderness had gone and she was bright and cheerful.

In February, 1896, she was well and free from pain and headache. All depression and suspicion had disappeared, and she had experienced no hallucinations of vision or smell since April, 1894.

Example 10. *To show that the pain of herpes zoster ophthalmicus may sometimes be associated with an hallucination of vision.*

George C., aged 37, seen by me at the London Hospital, August 27, 1897.

§ 1. He was well until August 21, when he began to suffer from intense pain over the right-hand side of his forehead. This pain steadily increased up till August 27.

On August 22 some spots began to come out on the forehead, and when I saw him on August 27 a well-marked herpes was present over the right half of the forehead. It did not involve the nose or the lower eyelid, and only extended backwards 2¼ inches from the centre of the eyebrow. He seemed, however, to have had pain as far back as a line passing vertically from ear to ear.

Since August 21 he had felt very ill, and had occasionally vomited, but he had no pain or tenderness in the chest, back, or abdomen. The heart and lungs were normal. The urine contained neither albumen nor sugar. There were no signs of nervous disease.

§ 2. Since the first onset of the pain he had slept badly and was troubled by horrible dreams.

In the week between August 21 and 27 he three times saw a dark figure come in at the door of his bedroom. He was extremely frightened, and went to ask his mother if she could see the figure which was visible as he sat up in bed. He had never seen anything like it before.

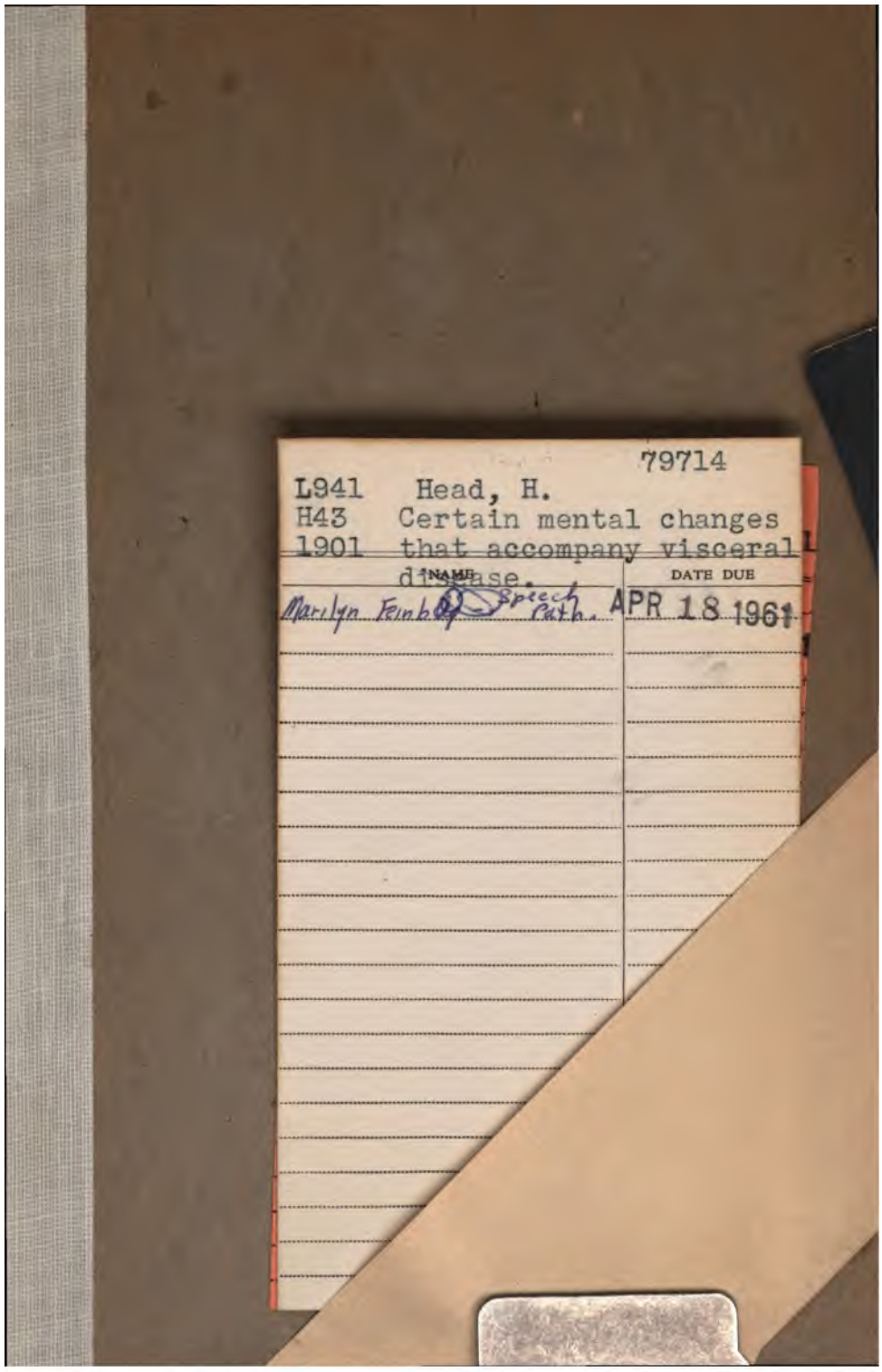
The cornea was unaffected and iritis was not present. Disc and fundus oculi were normal. Vision was normal and there was no error of refraction.

§ 3. The eruption gradually healed; pain left him about August 28, and he saw no more "visions."

LANE MEDICAL LIBRARY

To avoid fine, this book should be returned on
or before the date last stamped below.

APR 18 1961
JUL 31 2001


79714
L941 Head, H.
H43 Certain mental changes
1901 that accompany visceral
disease.
NAME
DATE DUE
Marilyn Feinberg Speech Path.
APR 18 1961